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European Timetable Conference

THE European Conference of Timetables & Through Services for 1947-48, which will be held at Montreux from October 10 to 19, will be the first since that at Budapest in October, 1938. Thereafter, the war in Europe made it necessary to postpone meetings, and the conference which was to have been held at Istanbul in 1939 was abandoned. All European railway administrations to or through whose systems international trains are run, are parties to the conference, which before the war was held every year in October, to fix the services for the twelve months from the following May. Because of their Continental services, the Southern Railway and London & North Eastern Railway are especially interested in this conference, but the London Midland & Scottish Railway and the Great Western Railway are also parties because of their connecting services. At the impending conference it has been agreed to permit the same number of qualifying votes as for the last normal pre-war year. Consequently the final votes at the plenary sessions will be based on those fixed for the conference at Stockholm in 1937. Between the 1914-18 and the 1939-45 wars, the annual conferences were held at Berne, Lucerne, Nice, Naples, The Hague, Baden-Baden, Prague, Vienna, Warsaw, Copenhagen, London, Brussels, Bucharest, Dubrovnik, Helsingfors, Montreux, Stockholm, and Budapest.

* * * *

Sir Montague Eddy on Argentine Pact

Sir Montague Eddy, who accompanied the British Mission to Argentina as a representative of British-owned railway interests, has given his views on the agreement in an interview with *The Financial Times*. He described the arrangement which had been reached as "eminently satisfactory," and said that the capital structure of the new Argentine company which is to take over the railway assets would have to be equitable to every class of holder. Dealing with the position of the ordinary shareholders of the British-owned Argentine railway companies, Sir Montague Eddy said that they would have to be satisfied that they were getting a square deal, or they would not approve the settlement. There would have to be "give and take" on the part of everybody. He explained that the capital structure of the new company would be settled by a technical mission which will visit Buenos Aires this month. He added that the figure of 80,000,000 pesos, including income to be guaranteed by the Argentine Government, could not be taken as a basis for calculating the size of the capital of the new company.

* * * *

International Conference of Tourists' Associations

The International Conference of National Tourists' Associations which opened at the County Hall, Westminster, on October 1, appears, from its representation, to be a miniature United Nations Assembly. It has been organised by the Travel Association of Great Britain & Ireland and is attended by delegates from thirty-seven nations. The conference is discussing such matters as the important question of passports and visas, currency control, Customs and immigration arrangements, student and young people's exchange visits, and the free movement of tourists. This is the first occasion on which such a representative conference has met in this country, and its declarations may result in the formation of an international organisation of tourist bodies with the object of facilitating tourist travel. The delegates were entertained to lunch on Tuesday by the four British main-line railway companies. Lord Portal, Chairman of the Railway Companies' Association, presided, and Colonel Eric Gore Browne, Deputy-Chairman, responded to the toast "The Railway Companies of Great Britain," proposed by Lord Hacking, Chairman of the General Committee of the Travel Association.

* * * *

Future of Rhodesia Railways

When Sir Dougal Malcolm, Chairman of the Rhodesia Railways Trust Limited, addressed shareholders at the recent annual meeting, he explained some of the difficulties under which the Rhodesia Railways, all the capital of which is held by the Trust, are labouring, as a result of uncertainty as to their future. This arises from the possibility that the railways may be acquired jointly by the Governments of Southern Rhodesia, Northern Rhodesia, and the Bechuanaland Protectorate. Sir Harold Howitt, who reported on the posi-

tion, suggested that the matter should be deferred for at least five years. His report is still receiving Government consideration, and in the absence of any decision, the Rhodesia Railways lack a suitable background for making important decisions. Some £20,000,000 of debentures might reasonably be replaced by others bearing lower interest rates about a year hence. To rehabilitate the railways after their war strain would call for an expenditure of about £6,000,000. If it was known that the railway would remain in private hands for some considerable time, the course of the Board would be clear. If, on the other hand, the acquisition of the railway is contemplated at an early date, there would be very substantial economy in the conversion of the debentures and the raising of new money being undertaken on Government credit. In view of the importance of the time factor, initial steps are being taken by the board to prepare its own plans for raising the money, but obviously in the interest of the railways, clarification of Government policy is becoming urgent.

* * * *

Machine Tool Design

The development of the machine tool has been a slow process, changes in design being largely dictated by the needs of the moment, and before the first world war the machine tool industry in this country passed through troublesome times, the volume of home trade being just sufficient to keep the industry alive. With few exceptions foreign trade was practically negligible. However, war inevitably acts as a spur to the development of manufacturing methods, for as new weapons are devised, faster means of producing them have also to be found, and as a result British machine tool design has made substantial progress in recent years. The need for progress is no less great today, as Mr. T. P. N. Burness, whose paper is dealt with elsewhere in this issue, pointed out at the recent Industrial Design Conference. As labour and material costs continue to rise, adoption of effective methods of production is essential, for only by this means can the prices of manufactured goods be kept within reason. Mr. Burness calls for centralised machine control as a feature of modern design, so that the maximum productive powers of a machine can be exercised by a minimum of control, and he also advocates greater attention to exterior appearance and the provision of increased facilities for maintenance. Ready accessibility to all parts should be incorporated in any new design.

* * * *

Railway Research in the United States

One of the differences between the railway industries of Great Britain and the United States of America is brought out in an abstract elsewhere in this issue of an article published recently in the *Scientific American*. The author points out that in the United States the unsatisfied demands for capital to improve and expand facilities involved directly in the conduct of transport in general have left little opportunity for the railways to undertake the development of manufacturing facilities to supply their own needs. Consequently, they have provided a large and diversified market which enterprising manufacturers have not been slow to exploit. This does not mean, however, that the railways themselves have not engaged in research. In cases where they have not conducted it directly, they have inspired and guided it. In Great Britain a large part of the locomotives and rolling stock used by the main lines has been built by the railways which have large-capacity works. When there are very large arrears of construction and maintenance to be overtaken, the privately-owned railway equipment manufacturers receive contracts, but for many years the general practice has been for the railways to build their own requirements. Because of this, the British private builders have been at some disadvantage in their export trade, in comparison with overseas manufacturers, of whom many, as in the case of the American, have the benefit of a large and sustained home market over which to spread their overhead costs.

* * * *

Pay-As-You-Go

A somewhat startling change in ticket arrangements is announced by the chairman of the Chesapeake & Ohio Railroad, in connection with the two new diesel-hauled streamline "Pere Marquette" trains just introduced by the larger company's Pere Marquette subsidiary between Detroit and Grand Rapids, Michigan. Although it is still possible to book tickets for, and seats on, these trains at station booking offices in the usual way, passengers are also encouraged to reserve seats by telephoning to booking offices or city ticket offices, and then to pay on the train. A specially-trained railway representative rides on each streamliner as a "host," to attend to the matter of fares and seats, and to make reservations for return journeys if passengers so desire. The announcement of the new method stated that "the aim of the C. & O. is to relieve passengers of all bothersome details beyond the telephone request for seat reservations. All the passenger will have to do thereafter is to get aboard the train just before the scheduled departure. . . . . In this manner it is believed railroad travel can be made more trouble-free." So it may be for the passenger, but the new plan may well foreshadow some thorny problems for the staff. Without tickets before starting, there will be little purpose in barriers or preliminary ticket examination, and in this event it may be difficult to prevent would-be "deadheads" from joining trains. Moreover, on a busy train, especially if stops are fairly frequent, considerably more than one "host" may be required to look after the complicated business of fare collection.

* * * *

New L.M.S.R. Third Class Corridor Coaches

Over 8,000 more seats will become available for long-distance travellers when the L.M.S.R. carriage works at Derby completes delivery, which has now begun, of 200 new third class corridor coaches, the introduction of which marks a further stage in the completion of a programme of 800 new passenger vehicles, more than 500 of which have been put into traffic by the company since the end of the war. Each carriage, which is 57 ft. long by 9 ft. wide and has a tare weight of 30 tons 14 cwt., seats 42 passengers in seven compartments, but hinged arm rests are provided between seats, so that at peak traffic periods the capacity of each carriage is increased to 56. The seats are double-sprung, and extensive trials were carried out to obtain the easiest contours for backs and head rests. Ventilation is on the extraction principle, and here, again, tests were carried out to ensure freedom from draughts. Other features of these carriages, which are described and illustrated elsewhere this week, are the design of the corridor windows and compartment doors, arranged so that passengers not in corner seats can enjoy a good field of vision, and the provision of four doors on the corridor side. Flush surfaces are provided wherever possible inside and outside.

* * * *

Curve Realignment in India

Elsewhere in this issue appears a brief review of Mr. Fenton's technical paper on curve realignment on the East Indian Railway. A convert from the theodolite to the versine method of checking and planning alignments, he was formerly responsible for realignments on a 90-mile section of the E.I.R. main line in 1934-35, carried out with theodolites. As Bridge Engineer he subsequently realigned 340 more main-line curves between 1939 and 1942, using versine methods. In 27 months this number of curves was completed at the average rate of one curve every 2½ days, inclusive of holidays. Most of this time was spent in fixing pillars, as the survey and solution accounted for only a few hours each. The actual field work was carried out by an Assistant Engineer aided by four surveyors, all engineering graduates. It was found possible to realign 9 out of every 10 of the curves with uniform curvature throughout between transitions; the remaining ones, mostly through station yards, had to be compounded. Two such curves, each nearly 1½ miles long, were slewed, including points and crossings, rodding, and interlocking gear, and a good deal less difficulty was experienced than had been expected. An important detail was the use of special holders for the survey wire, which, it was found, greatly facilitated the work.

* * * *

Pre-Assembled Track Relaying on the S.R.

As a result of detailed analysis of the problems presented by arrears of maintenance, the current high cost of labour, and staff shortages, Mr. V. A. M. Robertson, Chief Civil

Engineer, Southern Railway, last week submitted a scheme to the Board of Directors for introducing a system of pre-assembled track relaying. He sought authority for an expenditure of more than £100,000 in depot and other equipment, and showed that a return of 13 per cent. might be expected from this expenditure. The scheme was approved and is now being adopted. An interesting feature of its presentation was the use of a sound film prepared by the Southern Railway Film Unit, under the direction of Mr. C. Grasemann, to show the dismantling of a section of plain line, and its relaying with new pre-assembled material during a line occupancy of about 4 hours. To have viewed this during normal night operations would have been far from congenial, and at best could have been undertaken only by a delegation from the Board. The film showed all the essential features inside of 15 min. The present annual relaying programme of the Southern Railway involves between 125 and 130 track miles a year, and approximately one half of this will be undertaken with pre-assembled track.

* * * *

The Relaying Method

Although the Southern Railway claims no originality for the idea of track relaying with pre-assembled materials, the method that it has adopted is distinctive of its own particular needs, and is not merely a copy of that in use, for example, in Germany before the war by track-laying contractors. An excellent impression of it was given to the technical and general press last Monday when the opportunity was afforded of seeing the film prepared for the directors, to which reference is made in our previous note. The essence of the arrangement is precise detailed planning, based on an exact survey. This gives the data upon which the new track is assembled in the depot, and the order in which it is loaded in flat wagons for installation on site. The first depot to be used for the purpose is Redbridge. It is planned ultimately to establish a second depot at Hoo Junction (near Dartford), and others at Woking, Three Bridges, and Meldon Quarries, to serve the respective engineering divisions. At present, the method involves the occupation of both tracks, but it is hoped to devise means whereby one track occupation will become practicable. By close planning, the whole portion can be completed in about 4 hours, against 7 hours by normal methods. It has the further advantage of avoiding unsightly dumps of material at the lineside in preparation for the work, and of secondhand material awaiting removal after the actual relaying is finished. In view of the shortage of suitable labour—at present amounting to some 350 men—there is no risk of staff redundancy as a result of the obvious economies in the use of labour.

* * * *

New 4-8-2 Locomotives for New Zealand

During 1939-40, forty mixed-traffic 4-8-2 locomotives were built by the North British Locomotive Company, and, despite the great risks at the time, were delivered to the New Zealand Government Railways. We illustrated these engines, which were known as class "J" and were fitted with streamline casing, in our issue of July 28, 1939. So successful have these 4-8-2s been in service that recently, when the need arose for additional locomotive power in the South Island, it was decided to build a further 35 locomotives of the same general type, the chief difference in the new machines being the omission of the streamline casing. In almost all other respects the new locomotives, classed "Ja," which are now nearing completion in the Hillside (Dunedin) workshops of the New Zealand Government Railways, are identical with their predecessors. Some slight modifications have been made to the spring gear, to the braking equipment, and to the lubrication arrangements for the bushes in the connecting and coupling rods; and a further point of interest is the decision to equip one engine with roller bearings. If, after a thorough trial, these bearings prove to be successful, other engines, as they approach completion in the workshops, are to be equipped similarly. We illustrate the new class "Ja" elsewhere in this issue, and would extend our congratulations to Mr. Scott-Hill on his remarkably fine drawing, which, apart from its outstanding quality, is also an accurate picture, as his colleagues were quick to ascertain by counting rivet heads!

Railway Charges Inquiry

THE Railway Charges Consultative Committee sat on four days last week and daily this week to continue its inquiry into the charges made by the controlled railway companies and their joint lines, so that it can advise the Minister of Transport as to the best method to be adopted to secure that the revised charges would be likely to yield during the year 1947 sums approximating to the aggregate of the fixed sums (£38,633,000) payable to the companies by the Government *vide* the railway control agreement. Last week was occupied almost entirely by the cross-examination of Mr. C. R. Dashwood on financial questions and Mr. F. A. Pope on commercial matters.

For the National Coal Board it was pointed out that it was taking over the coal industry at a very critical moment, and any additional charge on it, such as an increase in railway rates, would be a matter of grave concern to it. Mr. Dashwood was then closely questioned as to the ultimate disposal of the £30 millions which the railway companies are holding under the control agreement at the request of the Minister of Transport for the purpose of meeting certain undisclosed contingencies, on the assumption that the contingencies only partly materialised. He replied that, although his personal view was that the amount was inadequate to meet the contingencies, in the unlikely event of there being an excess he thought it would be credited back to the net revenue in the last period of control.

Counsel for the L.C.C. and a large number of other local authorities representing a population of over 7 millions, about one-sixth of the population of the country, then made it clear that he proposed to argue that there was no justification for any increase whatever in the price of season tickets, workmen's fares, or ordinary passenger traffic, and directed his cross-examination of Mr. Dashwood to this end, remarking that although he agreed that the railway estimates of expenditure were accurate and could be accepted, he was critical of the manner in which the estimates of gross revenue had been compiled and suggested they were unduly low. He also criticised the fact that the Postmaster General is paying only a 30 per cent. increase over pre-war for the rail conveyance of letter mails, and only 10 per cent. above pre-war for the rail conveyance of parcels mails. He also criticised the fact that, in effect, passenger traffic was being asked to subsidise dock charges.

Counsel for the British Iron & Steel Federation and allied interests contended that the item of railway transport in production costs is larger in the iron and steel industry than in any other industry in the country. He criticised the suggestion that passenger traffic is at present subsidising goods traffic because it is impossible for the companies to work out the proportions of railway costs attributable to passenger and freight traffic respectively.

Mr. Pope was closely questioned by various counsel representing passenger interests, who criticised in detail the manner in which the railway estimates of receipts for 1947 had been compiled, arguing that they were under-estimated by about £8 millions. He was also asked what steps the companies proposed taking to overcome the present overcrowding of passenger trains. He replied that this was due primarily to the shortage of coaching stock because of cessation of construction during the war, losses by bombing, and by coaches having to be sent overseas, but the position was steadily being improved. He was also questioned as to his statement that if season-ticket rates and workmen's fares were increased to 37 per cent. above pre-war, they would represent a lower proportion of the total income of the individual than in pre-war days.

Various counsel representing freight train traffic interests cross-examined Mr. Pope as to the methods followed in preparing the estimates both of expenditure and engine mileage, arguing that the first had been greatly over-estimated and the latter under-estimated. So far as receipts are concerned, it was argued that, since the early months of the year, receipts had substantially improved, and it was reasonable to contend that the trend would be continued to a much greater extent in 1946 than the companies were prepared to admit, and, if this contention was correct, the position in 1947 would be substantially better than the companies had estimated.

XUM

During the hearing it was emphasised that both the railway companies and the numerous organisations who were represented by counsel were each aiming at assisting the committee by tendering the best possible advice as to the probable trend of traffic during 1947 so as to facilitate the preparation of its advice to the Minister as to the future level of charges, as to which the committee may well remark: "Save us from our friends!"

* * * *

The Railways of Baden

THE history of the various railway systems formerly operated by the separate German States, and united to form the Reichsbahn, or national system, in April, 1920, is full of interest and has been the subject of numerous writings. Recently there has been brought to our notice a short history of the railways of Baden, published at Freiburg in 1940,* on the occasion of the centenary of opening the first section of railway in the Grand Duchy, as it then was, between Mannheim and Heidelberg on September 12, 1840. These railways form an important link in the communications on the eastern side of the Rhine Valley, providing a direct connection between Mannheim, Frankfort, and the cities lying to the north and north-east thereof, and also the gateway to Switzerland at Basle.

One of the earliest advocates of railways in Baden was a merchant of Mannheim, of English descent, named Newhouse, who endeavoured to persuade the Government to construct a line from that city to Basle. Little progress was made, however, until competition appeared likely on the left bank of the Rhine.

The State then decided to make the line, and sent a commission to England, France, and Belgium to study railway engineering. One of its recommendations was that a gauge of 5 ft. 3 in. should be adopted. This was done, and is the only instance, apparently, of a broad gauge being used in what is now Germany, at least on an important line. The step was soon seen to be a mistake, and in 1855 conversion to the 4 ft. 8½ in. gauge was completed. In that year the line reached Basle, its terminus being on Swiss territory.

Traffic on the Baden lines has been much affected from time to time by political changes. Before 1871, when Alsace-Lorraine was French, the lines there were worked principally as communications westward with Paris, but after the Franco-German War the conditions were reversed. In addition, the Alsace-Lorraine system, constantly enlarged for strategic reasons, was directed, as Imperial property, from Berlin, under Prussian supervision.

Prussia, here as elsewhere, profiting from the oft-cited "particularism" of the former German States, pursued a policy of veiled antagonism to the neighbouring railway systems, in spite of the stipulations contained in Bismarck's State railway legislation. This book gives chapter and verse for some extraordinary instances of this policy. The other States, too, at times acted in this obstructive way. Nevertheless, the energy and initiative of the Baden authorities succeeded in building up a fine railway system, excellently equipped, run, and maintained.

After the 1914-1918 war, France came into possession of an Alsace-Lorraine system, improved out of all recognition over what it lost in 1871, and while seeking to improve connections westward, by new tunnels through the Vosges, was able also to maintain a serious north-south competition with Baden, and run important through services through Strasbourg, as, in effect, Prussia had done. The total length of the Baden State lines at the formation of the Reichsbahn was about 1,155 route-miles.

Karlsruhe became a Reichsbahn Divisional Management, but eventually its lines ceased to be identical with the former Baden system, changes being made in the routes administered to facilitate operation. These and many other interesting facts are admirably presented in a book of which our only criticism is that it lacks a good general map, the only one given being too small, unfortunately, for the importance of the work.

* "Die Badischen Eisenbahnen." (The Railways of Baden). 1840-1940: By A. Kuntzemüller. Freiburg University Press, 1940. 232 pages, 8½ in. × 6 in. Maps and illustrations

Promotion of United States Railway Equipment Exports

THE United States is looking ahead to the time when manufacturers of railway capital equipment will be able to take a more active part than at present in supplying overseas demands for their products. Railway systems in practically every part of the world require a good deal of re-equipment, to make good deficiencies which arose during the war, not only as a result of the additional strain which was placed on their mechanical assets as a result of increased traffics, but also because of the virtual cessation of manufacture by the principal producers of railway equipment for needs other than those which were directly associated with the war.

Exactly how many machine tools, locomotive wagons, and coaches each country needs, and the relative urgency of its requirements, is not so easy to ascertain. Another matter which requires investigation is whether the necessitous countries can pay in whole or in part for the imports they require, and if not, whether they can advance collateral to warrant granting a private credit. In some cases it may be that national policy might favour the extension of government credits in circumstances which do not warrant accommodation being given by banking and industry.

To find the answer to these questions President Truman has set up a committee of industrialists and bankers, under the chairmanhip of Mr. Winthrop W. Aldrich, Chairman of the Chase National Bank, and having among its members representatives, usually the Chairman or President, of other banking houses and makers of railway equipment. Among the objects of the committee, which will work closely with the National Advisory Council, the governing body headed by the Secretary of the Treasury which is responsible for establishing United States government policy as to financial and trade relations with foreign countries, will be that of stimulating and expediting exports of United States industrial equipment.

It is believed, according to our American contemporary, the *Railway Age*, that when this committee has completed its task, a large and continuing export market for American industrial equipment should be established for a considerable number of years.

From the particular standpoint of the railway equipment industry, a potential foreign market of some £14,000,000 a year for five years is considered to be in the realm of realisable probability. This would represent 1,000 steam locomotives and 40,000 freight wagons a year, which, it is estimated, would give employment to no fewer than 150,000 American workers.

Although domestic wagon building in the United States cannot well be devoted to greater manufacture for export during the present shortage of materials, this situation will be remedied speedily when more materials are available. American wagon builders will then have a good deal of capacity to spare.

American locomotive builders, even at the present time, are believed to be in a position to accommodate a much larger volume of export business than they have on their books, because most of their foreign orders are for steam locomotives, whereas at present domestic orders very largely are for diesels. From the viewpoint of the United States railways, a substantial foreign market for equipment builders is advantageous, because of the contribution of such business to domestic traffic and employment, and because it gives the equipment builders a larger gross business over which to spread their overhead expenses.

In appointing the committee, President Truman emphasised, moreover, that he was anxious that there should be the fullest co-operation between the governmental agencies, private industry, and finance, with the common aim of the return of United States foreign commerce and investment to private channels as soon as possible. A number of leading railway equipment manufacturers have given their approval to the effort, and at the same time the Steam Locomotive Export Association, the Railway Car Export Association of America, and the American Railway Car Institute, are likewise co-operating.

Argentine Railways

THE ratification by the railway stockholders of the agreement completed on September 17 between the British Mission to Argentina and representatives of the Argentine Government will close a chapter in the history of British engineering and financial enterprise in South America covering almost a century.

The first railway to be built, the Buenos Ayres Western, dates from the year 1857, and this was followed in 1862 by what is now the Central Argentine. Three years later, construction commenced on the Buenos Ayres Great Southern, the longest of the British lines about to be transferred to Argentine ownership. Subsequently, the Buenos Ayres & Pacific company was formed, and by a series of leasing agreements with smaller British lines, notably the Argentine Great Western, the Villa Maria & Rufino, and the Transandine—which tunnelled two miles through the Andes at an altitude of 15,800 feet—linked Argentina and Chile, thus completing the first transcontinental line in South America.

Lesser British Railways

Among the lesser British railways are the standard-gauge Entre Rios and Argentine North Eastern, which operate in the provinces of Entre Rios and Corrientes and the national territory of Misiones. By obtaining running powers, first, over the Central of Buenos Aires, an Argentine company which connects the Federal Capital with the provincial town of Uriburu (formerly called Zárate) on the river Paraná, and, subsequently, over the Central Railway of Paraguay, a British company, through rail communication was established between Argentina and the land-locked republic of Paraguay. Not the least interesting experience of the traveller over the 950-mile journey from Buenos Aires to Asunción, capital of Paraguay, is the trip by train ferry operated by the Entre Rios railway for 45 miles across the Paraná from Uriburu, on the Buenos Aires side, to Ibicuy, on the Entre Rios bank.

The British-Argentine railways which have been mentioned operate about 15,085 miles of through line and represent more than half the railway mileage of the country. They also constitute the major part of the assets to be transferred to Argentine ownership. The only metre-gauge British company is the Buenos Ayres Midland, 322 miles long, owned jointly by the Buenos Ayres Great Southern and Buenos Ayres Western Railways, and will be sold with them.

Nearly all the other railway companies are in French ownership. There are three, and they operate 2,600 miles of line, of which 513 are broad-gauge and 2,087 metre-gauge. Their association with the State Railways, most of which are the same gauge, has always been close and became closer still during the war, when the stockholders were separated from their properties in Argentina by the German occupation of France. In the light of the agreement for the purchase of the British-owned lines, it is to be foreseen that French interest in the railways of Argentina soon will cease also.

Combined Operations

The results of working all the Argentine railways for the financial year to June 30, 1944-45, were as follow:—

	Gauge	Route miles	Net receipts (pesos)	Per cent. working expenses to gross receipts
British companies—			('000 omitted)	
B.A. Gt. Southern, incl. B. Blanca and N. Western	5 ft. 6 in.	5,082	35,475	79
Central Argentine	,,	3,700	22,812	85
B.A. & Pacific, incl. Arg. Gt. Western and V. Maria & Rufino	,,	2,801	27,474	77
B.A. Western	,,	1,940	11,498	81
Entre Rios	4 ft. 8½ in.	809	4,526	79
Arg. North Eastern	,,	753	4,939	69
		15,085	$106,724	
State railways	Mostly 1 metre	7,951	33,141	80
French companies—				
Rosario to P. Belgrano	5 ft. 6 in.	513	622 (loss)	111
Prov. of Santa Fe	Metre	1,300	5,350	81
Cia. General B. Aires	,,	787	1,536	92
Other companies—				
Central of B. Aires	4 ft. 8½ in.	298	745	92
		25,934	$146,874	

Note.—Net receipts in pesos shown above were published in Buenos Aires and disregard expenses in London, losses on exchange, and other charges not recognised as railway working expenses in Argentina

Of the lines in Argentine ownership, by far the most important belong to the State—altogether about 7,951 route miles, nearly one-third of the total railway mileage of the country. They serve all the 14 provinces, as well as many of the 10 national territories. The system is composed almost entirely of metre-gauge lines, and has evolved from the purchase of metre-gauge companies, mostly British, from time to time. Most recent acquisitions took place just before the war, when the Córdoba Central Railway was bought from the British stockholders and enabled the State Railways to gain independent access to Buenos Aires. Shortly afterwards, the Argentine Transandine was taken over, also a British metre-gauge company. With the addition of these two lines, the State Railways became integrated into a transcontinental system and placed Argentina in direct rail communication with Chile and Bolivia without change of gauge.

Merits of Respective Systems

Advocates of State ownership, as opposed to private enterprise, will observe that the constitution of the new Argentine railway company creates conditions under which the merits of the respective systems can be proved by practical experience. The principal State Railways form a network of about 6,500 miles of metre-gauge lines, stretching from Buenos Aires to Chile in the west, and to Bolivia in the north. Throughout most of the same territory several of the present British-owned broad-gauge railways operate also and soon will become a unified Argentine railway company. Hence, users of rail transport will have an opportunity of judging the merits and demerits of State and private enterprise, operating side by side under identical conditions.

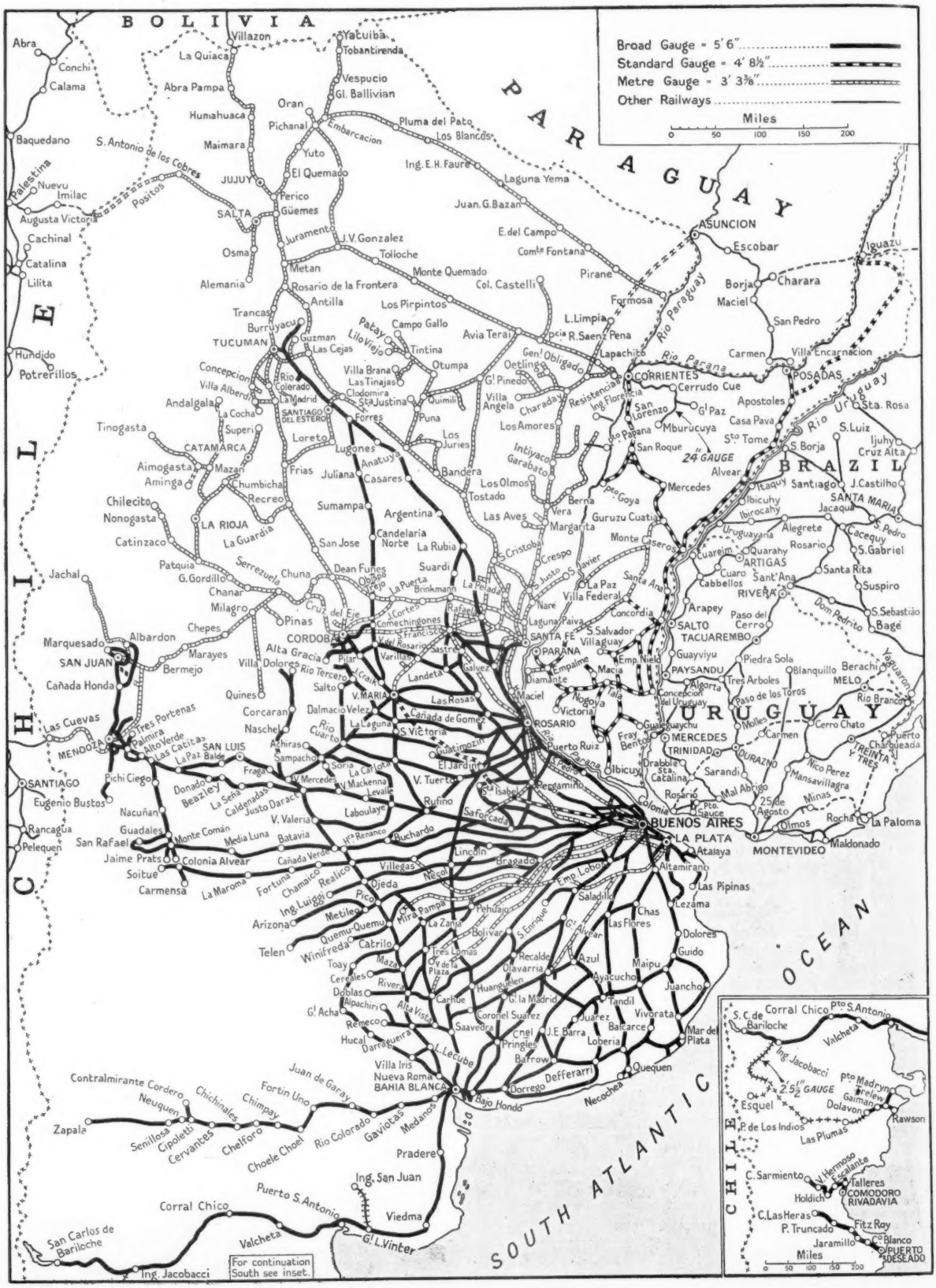
Developments will be watched with great interest by students of railway economics, not only in Argentina, but also in Great Britain and other countries where the subject continues to raise controversy. If experience proves State ownership to be preferable, there will be little difficulty in dispensing with private enterprise. Indeed, such a contingency has been foreseen, as a clause of the agreement empowers the Argentine Government to take over the shares of the new company at any time at par. The implied challenge may well act as a powerful incentive to the present State Railway Administration to exert every effort to improve its already well-established reputation for efficiency, economy, and readiness to adopt modern methods of operation.

Exchange Losses and British Income Tax

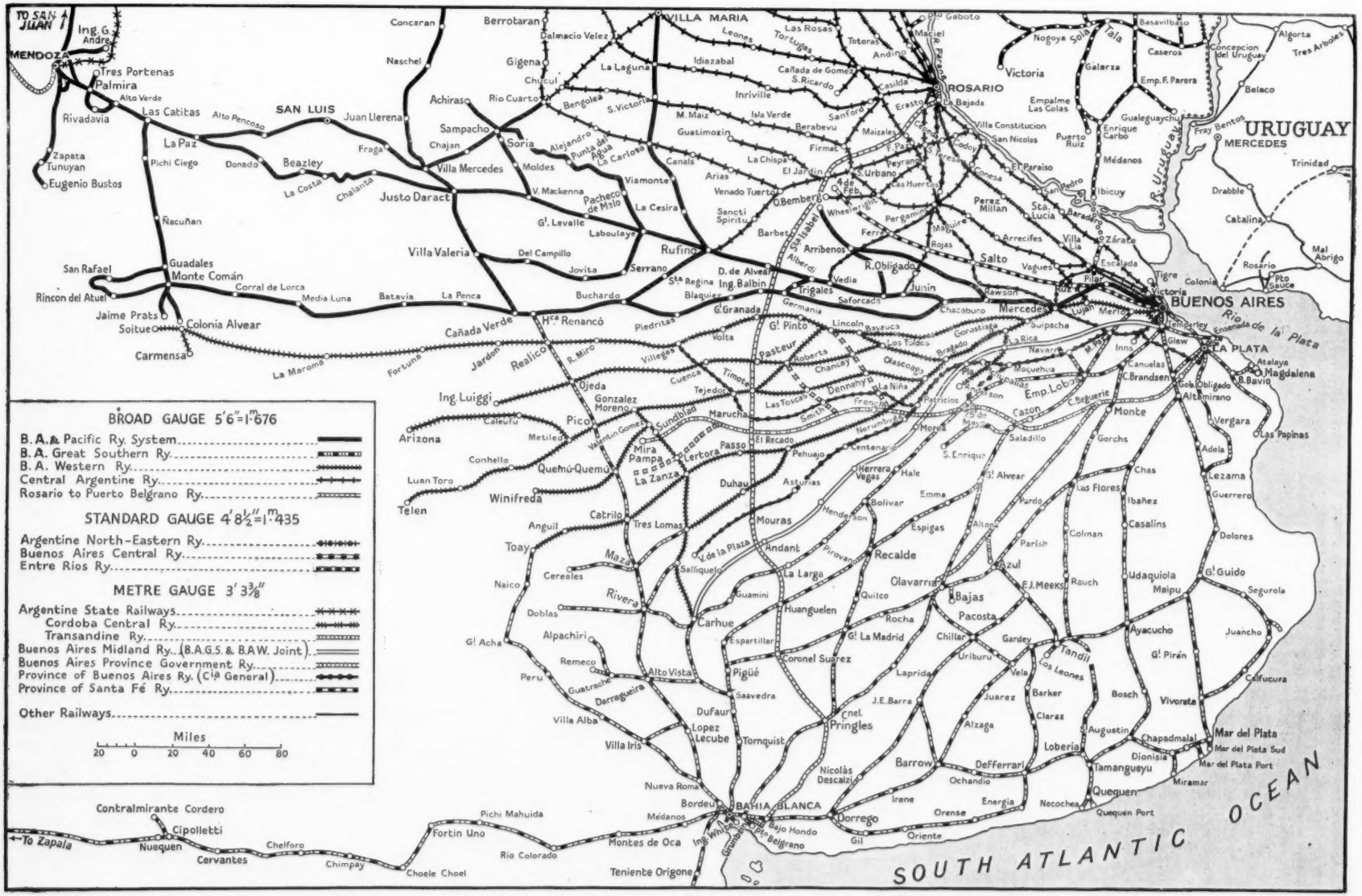
When the history of British railway enterprise in Argentina is written, it will reveal that the discontinuance of British ownership arose primarily out of exchange losses in transferring earnings in pesos to London in sterling, which could not be overcome by measures which lay within the power of the companies. Exchange losses are the aftermath of the first world war, from which the companies have never recovered. There is another disadvantage which the railways are equally powerless to overcome. It relates to the incidence of British income tax, which stands as an insurmountable barrier before the Argentine capitalist who contemplates an investment in his own railways. All holders of debentures and shares in Argentine railway companies registered under English company law are subject to British income tax at the full standard rate, which is deducted at the source and from which stockholders resident in Argentina virtually have no means of obtaining relief. The point was not important when income tax was a few pence in the pound, but world wars have brought successive increases until the Argentine investor is faced with the forfeiture of as much as 50 per cent. of the interest on any capital investment in the railways of his country purchased through the London Stock Exchange. Under the terms of the agreement for the sale of the lines, freedom from Argentine taxation is specifically conceded to British stockholders in the new Argentine company, and is in striking contrast with the treatment meted out to Argentine shareholders when the lines have been subject to English law.

Conditions of Sale

The *ad referendum* agreement offers the British companies a guaranteed net income of $80,000,000 a year—about £5,000,000. If the net receipts from working the lines do not reach that figure in any year, the Government will make good the deficiency to holders of the initial capital issued to British stockholders who transfer their assets to the Argentine com-



The railways of Argentina, showing gauges



Map of railways radiating from Buenos Aires, indicating both ownership and gauge

pany. It has not been determined yet how the amount of $80,000,000 shall be distributed among the various companies, but, in the absence of a complete reconstruction scheme and the creation of a combined holding company, it is possible that the allocation may be made in proportion to the respective net receipts before the lines were taken over, which is shown, approximately, in the following statement:—

	Net receipts in pesos 1944-45 (See Note 1)	Guaranteed net income in pesos (See Note 2)	Guaranteed net income in £ (See Note 3)	Net receipts in £ in London 1944-45 (See Note 4)
		('000 omitted)		
B.A. Gt. Southern, incl. B. Blanca & North Western...	35,475	26,100	1,631	1,789
Central Argentine	22,812	17,200	1,075	1,275
B.A. & Pacific, incl. Arg. Gt. Western and V. Maria & Rufino	27,474	21,000	1,312	1,287
B.A. Western	11,498	8,600	538	600
Entre Rios	4,526	3,300	206	278
Arg. North Eastern	4,939	3,800	238	318
	$106,724	$80,000	£5,000	£5,547

Note 1.—Peso net receipts published in Buenos Aires, which disregard expenses in London, loss on exchange, and other charges not recognised in Argentina as railway working expenses

Note 2.—Proportional distribution of $80 millions guaranteed net income between companies based on net earnings in 1944-45 shown in column 1

Note 3.—Peso figures in previous column, converted at $16 to £

Note 4.—Net sterling receipts available for distribution according to last accounts published in London, after meeting exchange losses, London expenses, etc., but excluding net revenue from investments and other income apart from railways

In considering the guaranteed income, in sterling, shown in the third column, it should be borne in mind that the first charges will be London and Buenos Aires office expenses, pensions and compensations to staff, local directors, and others whose services may not be retained by the new Argentine company. The prospects of meeting debenture interest and other debt charges, and of making some return to holders of preference and ordinary shares, vary considerably between one company and another on account of wide differences in capital structure and the terms of schemes of arrangement applicable to debenture issues in default. In most cases reconstruction proposals appear to be inevitable.

After the guaranteed net income, probably the most interesting feature of the agreement relates to the establishment of the initial capital of the Argentine company, all of which will be allotted to British stockholders in exchange for their assets. If the annual income of £5,000,000, bearing the guarantee of the Argentine Government, be accepted as the basis for computing the initial capital, there would appear to be sound grounds for calculating the amount on a yield of 2½ per cent. per annum, inasmuch as the credit rating of the guarantor in world financial markets is unsurpassed. Thus, an assured income of £5,000,000 should have a capitalised value of £200,000,000.

Under the Mitre Law, the Government retained the right to expropriate the lines at any time by payment of the recognised capital, plus 20 per cent. The latest available figure of recognised capital is $2,642,000,000, which, plus 20 per cent., amounts of $3,170,000,000. At $16 to the pound, the equivalent would be £198,000,000, or £51,000,000 less than the combined issued capital, which is as follows:—

	£
Debentures and other debt	103,000,000
Preference shares	51,000,000
Ordinary and deferred stock	95,000,000
	£249,000,000

Ancillary Undertakings

The recognised capital includes only assets essential for the railway services. The companies have made investments is ancillary undertakings, and those situated in Argentina will be taken over at a valuation to be agreed at the same time as the initial capital of the railways themselves is settled. Among such investments is the Cia. Ferrocarrilera de Petroleo, which was formed by the Buenos Ayres Great Southern, Buenos Ayres Western, and Buenos Ayres & Pacific companies to develop an oil concession at Comodoro Rivadavia, with the primary object of ensuring oil-fuel supplies for the railways to render them less dependent on imported coal. The company has proved a financial success and should make an appreciable contribution to the total purchase price. There are also properties in the city of Buenos Aires, among them the Railway Clearing House, several buildings which accommodate headquarters office staffs, and the assets of the Villalonga Express Company, a wholly-owned subsidiary which, in conjunction with the American Express, offers the Argentine public the same services as are provided by Thos. Cook & Son, Pickfords, and Carter, Paterson in Great Britain.

The Buenos Ayres & Pacific and Central Argentine companies hold large investments in the Catalinas Warehouses & Moles Company, which owns extensive and valuable lands in the port of Buenos Aires. Clearly, much will depend on the course of the negotiations to be commenced in October between the sub-committee appointed by the Argentine Government and representatives of the companies for the purpose of agreeing the total purchase price, but sufficient information is available to support the view that the final figure may approach the total issued capital of the companies. From the standpoint of the Argentine Government, such a transaction would be very favourable, as the price would be far below the cost at which the railways could be produced at present.

Anticipated Earnings

A minimum return of 4 per cent. and a maximum of 6 per cent. on the capital of the new company is anticipated in the agreement. Net earnings over 6 per cent. will be either ploughed back into the business in the form of new constructions and modernisation schemes or used to amortise the share capital. The effective co-ordination of rail, road, and air services which is expected to follow the contribution of $500,000,000 in cash by the Government during the next five years to modernise the railways, can hardly fail to produce increased revenues. Furthermore, Argentina is a land of prodigious natural wealth, and occupies a key position among the major food producers of the world. Two wars have intensified the development of the country's resources to the point where it has been possible to pay off most of the public debt held abroad, and there is every indication that dependence on foreign capital will give place to financial self-sufficiency. Many new industries have been created and the company will import only products not obtainable locally.

Among the items imported formerly for the railways and now available in the local market will be found the output of light engineering industries, textiles suitable for uniforms, printed books and forms, and equipment for restaurant cars and refreshment rooms. The assured flow of orders from the railways will produce a sound foundation for expansion of local industries, which, in turn, will increase the tonnage of general merchandise consigned over the railways.

Nevertheless, grain, meat, wool, hides, and raw materials for export to the great manufacturing countries will continue to be the staple traffics, of which the variety and volume will be limited only by the vagaries of rainfall and harvests. But the days when the lines were wholly dependent on grain and livestock are past. One of the most lucrative developments has been the growth of the petroleum industry, and the impressive output of the oilfields at Neuquen, on the Buenos Ayres Great Southern, and at Mendoza, served by the Buenos Ayres & Pacific and State Railways, would have been surpassed long since, had it been possible to obtain more equipment.

It has long been the policy of the State Railway Administration to substitute diesel and diesel-electric traction for the steam engine. The impossibiliy of obtaining diesel locomotives has held back programmes for re-equipment of the State lines during the war, and to those accumulated demands there will now be added far larger orders on behalf of the new Argentine company, which may be expected to follow the same dieselisation policy as the State Railways. The capital outlay will be considerable, but so, too, will be the operating economies. Experience on the State Railways has proved that expenditures on diesel equipment are recouped rapidly by savings in working expenses in a country such as Argentina, which can produce its own diesel oil cheaply from local oilfields, but has little coal production, and where water difficulties abound.

Freed from irksome and costly foreign exchange losses and with ample fresh capital assured at minimum rates of interest, there opens up a vista of progress and economic well-being for the Argentine railways. The participation of British engineering and industrial skill in the provision of transport equipment will be limited only by the capacity of manufacturing plants in Great Britain to turn out supplies in the requisite quantities.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Riding Qualities of Multiple-Unit Trains

Hove. September 28

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Having considerable experience of travel in multiple-unit trains on the Brighton, Worthing, Eastbourne, and Bognor services, I venture to disagree with Mr. Watts in condemning their riding qualities as a uniform whole. There are at least five quite differently-riding types of stock usually working on these routes, namely:—

(1) The original six-coach Brighton express units
(2) The original four-coach Brighton semi-part units
(3) The later six-coach express units on the Brighton, Worthing, and Eastbourne services
(4) The all-corridor two-coach semi-part units
(5) The Bognor express stock

You will notice that I include the semi-fast, but not the suburban type stock, because the former is consistently called upon to run at speeds as high as those of the express stock, on such trains as the 4.28 p.m. and 6.28 p.m. ex-Victoria.

In my experience, types (2) to (5) normally are excellent-riding units, motor coaches as well as trailers. Types (4) and (5) are, perhaps, the most consistently smooth running, and I cannot call to mind ever having had cause for complaint regarding their riding, though sometimes they must have been in need of repairs when I travelled in them. Types (2) and (3) are scarcely less satisfactory, unless they happen to be due for lifting, and then any coach, electric or steam hauled, may be liable to "hunt."

The one exception—of which Mr. Watts evidently has had unfortunate experience—is type (1). The riding of the motor coaches of these units exactly answers to his description. Their springing is certainly inferior to that of the other types, and fails to mitigate the effects of "heavy unsprung weights." There is a dead "thump, thump, thump" at the rail joints, and the riding is decidedly rough and sometimes causes train-sickness. The trailer coaches of this type of unit also are inferior to those of other types. Their suspension appears to be similar to that of their motor coaches, but as they have no unsprung weight the effect is less serious.

Personally, I have not found that there is normally anything inherent in the multiple-unit system to cause seriously-defective riding, and, though lack of maintenance of both stock and track naturally accentuates riding defects, it can hardly be considered as a primary cause of those under discussion.

These are merely the views of a passenger, who would suggest that the vehicles to avoid are the open-type motor coaches with equalising beams between and over the axle-boxes.

Yours faithfully,
SOUTHERN PASSENGER

Railway Inspection

1, Cavendish Street, Skipton, Yorkshire.
September 19

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I have read with interest your recent publication "Railway Inspection." May I, however, make the following comments?

Even before the Act of 1889, the Board of Trade interfered considerably in technical matters, by enforcing the adoption of the block system and interlocking on new lines. This extension of the Board's power of postponing the opening of new lines (under the Act of 1842) was regarded as somewhat unfair, and, indeed, its legality was questioned by some companies. Interlocking was made obligatory on new lines about 1866 and the block system in 1874.

With regard to the list of Inspecting Officers (p. 19): in 1853, General Simmons (then holding the rank of captain) occupied the post of Secretary of the Railway Department, a position held in 1858 by Captain Galton. In 1870, Captain Tyler was appointed Chief Inspector of Railways and was followed in this office (in 1876) by Colonel Yolland. Some of the very earliest inquiries were carried out by Professor Barlow, of the Military College of Science.

Reports on accidents are now issued as separate publications and not "quarterly in a Government publication" (p. 22).

Yours faithfully,
J. G. HOLMES

[Until the Act of 1889 was passed, neither interlocking nor the block telegraph system was specifically referred to in any statute, but the Inspecting Officers of the Board of Trade, acting under the general powers they possessed of saying whether a new line was fit for traffic or not, no doubt often did, in effect, make such equipment obligatory. In fact, Colonel Yolland had done this at Kentish Town Junction as early as 1859. We have referred to the requirements issued in 1874, but cannot see that they clearly conveyed that block working would always be insisted on in future; nevertheless, the Inspecting Officers may have so acted. Our list of Engineer Officers was intended to cover only those who conducted inspections and not any who may have held secretarial or other appointments in the Railway Department. The text of our booklet unfortunately had gone to press before the new practice—which we welcome—of making individual accident reports purchasable through the Stationery Office was instituted. —ED., *R.G.*]

Publications Received

Curve Realignment on the East Indian Railway, by J. M. Fenton, Deputy General Manager, E.I.R. Technical Paper No. 316, Government of India, Railway Board. Foolscap 25 pp. and 11 folding diagrams. Price Rs. 2.11.0 or 4s. 3d.—Though the author wrote an earlier technical paper on curve realignment by the theodolite method in 1936, he now advocates the versine method of curve survey as being not only as accurate as with a theodolite, but giving results of such precision that, with normal track maintenance—even when using closely-spaced permanent alignment pillars—it is not possible to more than closely approach their high standard of accuracy.

He rejected methods limited to smoothing out the major irregularities in the versine diagram, as he found that almost all curves could be realigned as uniform curves approached by adequate transitions. He also found that there were few curves where bridges or other fixed structures did not affect slewing, and considers it is often best to arrange for maximum positive and negative slews to be equal, rather than striving for equality in aggregates of slews of opposite sign, a goal entailing much more labour and time. The paper outlines the basic mathematics common to all versine methods and gives the conventions adopted in putting them into practice. The author's methods are then described in detail with notes on organisation and appendices, one of which deals with cant for various present and future speeds. Ample diagrams are included. Elsewhere in this issue an editorial note describes some of the practical conditions and work done on the E.I.R. by Mr. Fenton.

The Hull and Barnsley Railway. G. D. Parkes. Sidcup, Kent: The Oakwood Press, 19, The Drive. 7¼ in. × 5 in. 25 pp. Illustrated. Paper covers. Price 3s. 6d. net.—Promoted by citizens of Hull resentful of the North Eastern monopoly, and supported by Hull Corporation, the Hull & Barnsley Railway nevertheless led a chequered existence from the outset. Not always through any desire of the management was its independence preserved until 1922, when, inevitably, it was absorbed by the big neighbour it had been built to challenge. Since 1899, however, the Hull & Barnsley had benefited by a *rapprochement* with the North Eastern, symbolised by the building of the joint King George dock. Its Hull docks and the South Yorkshire coal traffic were the mainstays of the company, which when absorption came, owned 3,152 open wagons as against only 160 passenger coaches. Dr Parkes brings both scholarship and local knowledge—he was born at Wakefield—to the task of presenting the development of this interesting, if not altogether successful, enterprise, and the result is an admirably concise work which originated as a paper delivered before the Oxford University Railway Society in 1936. The double-page map included shows clearly the ramifications of the Hull & Barnsley and its associates in Hull and the coalfield areas. The seven illustrations depict the company's crest, tickets, three of the Stirling domeless-boiler locomotives, and premises in Hull.

Calendar of the American Steel Foundries.—In the customary way, the American Steel Foundries of Chicago have issued their midyear-to-midyear calendar covering the period from July, 1946, to June, 1947. These calendars are already world-famous for their reproductions of historic railway prints, and once more twelve early subjects are reproduced in colour. Each sheet of the calendar contains (in addition to a picture) the current month, the preceding month, and the successive month. A title page gives a brief history of each print.

The Scrap Heap

NEXT WEEK'S RAILWAY CENTENARIES

Hull to Bridlington (31 miles), York & North Midland Railway, opened October 6, 1846.

Thinford Junction to Cornforth (1½ miles), Great North of England Railway (Clarence & Hartlepool Section) opened October 12, 1846.

* * *

WHERE IS THE SENSE?

British coal-burning locomotives are being changed over to oil at great expense. Running costs will be more.

British ships are also being converted to oil-burning because of the shortage of bunker coal. Thus we are putting the national economy at the mercy of events in remote uncontrolled oil-fields.

We hesitate to employ foreigners to dig coal for good wages in our own country.

But we do not mind employing them, indirectly, at low wages, in far-off regions to produce oil for our ships and locomotives.

Could absurdity be carried further?—*From "The Daily Express."*

* * *

RADAR ON RAIL

In June, 1941, the town of Glossop, Derbyshire, was chosen by the Naval authorities to be a main storage depot for radar sets and parts. Between 3 and 3½ million packages of radar sets, valves, and components which came to Glossop for testing and redistribution have left Glossop Station, L.N.E.R., by passenger train for nearly every port in the British Isles, as well as to inland stations. The remarkable point of this traffic was that, although up to December, 1942, everything had to be waybilled or stamped on the platform, and all parcels were manhandled, there being no cranage, so little damage occurred as compared with other loading depots. The difference was so marked that officials from London visited the station to inspect the loading system. The staff at Glossop, in addition to the Stationmaster, consisted of one man clerk and one woman clerk, a foreman, two leading porters, one grade 2 porter, one porter-signalman, one porter-guard, and four women porters.

All change be blowed; we're squatters!

FIRST U.S.A. LOCOMOTIVE PATENT

The Association of American Railroads has pointed out that 110 years ago, on July 13, the United States issued its first numbered patent, which was for a locomotive "designed to give a multiplied tractive power to the locomotive and to prevent the evil of the sliding of the wheels." The patent was issued to John Ruggles, United States senator from Maine, who was largely responsible for the passage of the Act of July 4, 1836, which set up the present-day method of issuing and numbering patents. Senator Ruggles's invention was a gear-like rack-railway arrangement for locomotive wheel and railway rail which would mesh for gradients. U.S.A. steam locomotives of today contain around 1,000 patented features.

* * *

100 YEARS AGO

From THE RAILWAY TIMES, *October* 3, 1846

HARWICH STEAM PACKET COMPANY.—Provisionally registered, pursuant to the Act 7 & 8 Vict. c. 110.—To be formed by the Proprietors of the Eastern Counties and Eastern Union Railway Companies.

Capital, 150,000*l.* In 30,000 Shares, of 5*l.* each, with power to be increased to 300,000*l.*

Chairman—David Waddington, Esq. Deputy-Chairman of the Eastern Counties Railway Company.

Deputy-Chairman—John Chevallier Cobbold, Esq. Chairman of the Eastern Union Railway Company.

DIRECTORS.

Samuel Anderson, Esq. Director of the Eastern Counties Railway Company.
John Bagshaw, Esq. ditto.
George Fisher, Esq. ditto.
Thomas Gibbes, Esq. ditto.
Robert William Kennard, Esq. ditto.
Francis Valentine Lee, Esq. ditto.
Richard Paterson, Esq. ditto.
William Routh, Esq. ditto.
John Cobbold, Esq. Director of the Eastern Union Railway Company.
Jeremiah Head, Esq. ditto.

Solicitor—John Duncan, Esq.

Bankers—London: The London and Westminster Bank; Messrs. Denison, Heywood, Kennards, and Co. Harwich: Messrs. Cox, Cobbold, and Co.

Secretary—Charles T. Beke, Esq.

The Harwich Steam Packet Company is formed for the purpose of establishing steam communication with the ports of Northern Germany, Holland, and Belgium, by which a considerable saving of time and expense will be effected in voyages to and from those ports.

It is intended to provide powerful steam boats, built on the most improved principles in respect of construction and engines, replete with every possible convenience and comfort, and adapted to the ample accommodation of passengers; and that they shall also carry a limited quantity of suitable cargo.

The expected traffic by the steamers has been ascertained from the most correct data procurable, and the tables of traffic framed with the greatest care; and from the calculations made, the receipts of the Steam Packet Company, after making ample deduction for expenses, will produce at least seven per cent. upon the capital. In addition to this, the calculations show that the Eastern Counties and Eastern Union Railway Companies will be largely benefited by an important increase of revenue to their respective railways.

Arrangements have been made with the Eastern Counties and Eastern Union Railway Companies, by which the proprietors of the Steam Packet Company will receive a dividend of not less than five per cent. per annum on their subscriptions; and therefore the shares will be distributed among the proprietors of those two Railway Companies and of the Northern and Eastern, and Ipswich and Bury St. Edmund's Railway Companies, in the proportion of 24,000 shares to the Eastern Counties and Northern and Eastern Railway Companies, and 6,000 shares to the Eastern Union and Ipswich and Bury St. Edmund's Railway Companies.

The registered proprietors of the said several Railway Companies, desirous of participating in the benefits of this undertaking, are requested to signify their intention to take the shares allotted to them, by paying the deposit thereon to either of the Company's bankers. The proportion of the Harwich Steam Packet Company's shares for the holders of the new 14*l.* 10s. shares in the Eastern Counties Railway Company, and for the holders of scrip shares in the Northern and Eastern Railway Company, will be set apart for them, and each holder, on transmitting his scrip to the office of the Eastern Counties Railway Company and requesting an allotment of shares, will receive a letter of allotment accordingly. The shares not applied for on or before the 10th day of October next by such scripholders, will be allotted by the Directors to such other persons as shall appear to be most eligible.

Harwich Steam Packet Company's Office,
6, St. Mildred's Court, Poultry, London,
Sept. 24, 1846.

Politics are Poison!

A safe rule is never to let yourself be drawn into talking politics with a patron. Many people lose their tempers at the slightest disagreement on that subject. Let's stick to building good will in our fields, and not go outside where we can get into trouble. Politics are Public Relations poison!

[From "Company Manners" issued by the New York Central System

Mr. C. Squarey, Overseas Traffic Manager of Thos. Cook & Son Ltd., who recently returned from a short holiday in Norway, in an interview with *Aftenpost* expressed his admiration of the travel arrangements in a country which but a short while ago was overrun by the Nazis. Mr. Squarey said: "While train speeds are not particularly imposing due to many technical difficulties, the courtesy of the Bergen railway officials is something of which Norway should be proud. The conductor on my train took great pride in his work and was most apologetic that we were running seven minutes late." Mr. Squarey likened the steamer route Stavanger-Bergen to the famous inland seas of Japan. His advice to the Norwegians was to advertise their own wonderful inland seas, saying that "if they are sufficiently well-known tourists will come in their shoals."

* * *

NAMED TRAINS IN THE U.S.A.—7

Passenger

Name	Railway	Scheduled run
Sunshine Special	Missouri Pacific: Texas & Pacific: Southern Pacific: N.R. of Mexico	St. Louis—Dallas—El Paso—Los Angeles—New Orleans—Galveston—Mexico City
Super Chief	... Atchison, Topeka & Santa Fe	Chicago—Los Angeles
Trail Blazer	... Pennsylvania	... New York—Chicago
Twentieth Century Limited	New York Central	Chicago—New York
Twin Cities "400"	Chicago & North Western	Chicago—St. Paul—Minneapolis
Varsity ...	... Chicago, Milwaukee, St. Paul & Pacific	Chicago—Madison
Water Level Limited	New York Central	Chicago—New York—Boston
Zephyr-Rocket	... Chicago, Burlington & Quincy: Chicago, Rock Island & Pacific	St. Louis—St. Paul—Minneapolis
Zipper ...	... Chicago & Eastern Illinois	Chicago—St. Louis
Yankee Clipper	... New York, New Haven & Hartford	Boston—New York

Goods

Name	Railway	Scheduled run
Ripper ...	... Illinois Central	... Gwin—Memphis
Rocket ...	... Missouri—Kansas—Texas	Dallas—Kansas City
Rule Ten	... Western Pacific	Salt Lake City—San Francisco
Silver Bullet	... Louisville & Nashville	Cincinnati—New Orleans
Smoky Joe	... Illinois Central	... East St. Louis—Jackson
Speed Witch	... Pennsylvania	... Greenville—Philadelphia

* * *

AT THE RAILWAY CHARGES CONSULTATIVE COMMITTEE

Mr. Lionel Heald, K.C.: Could we have the date of the information?

Mr. Leon MacLaren: I am told it is *The Railway Gazette* for 1946.

Chairman (Sir Bruce Thomas, K.C.): But *The Railway Gazette* comes out every week, you know.

Mr. MacLaren: I am sorry, Sir; I was wrong. I understand that the information does not come from *The Railway Gazette*, but it has been drawn by those instructing me from "A History of British Railways during the War."

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

Works at Durban

Considerable progress has been made in the preparatory work at the head of Durban Bay, where the new railway workshops and marshalling yards are to be built on reclaimed land. In all, some 5,000,000 cu. yd. of sand, mostly brought out of the bay by dredgers and spread by pumping, will be needed to bring the level of the land up to the required height. On top of the sand, which is too light to withstand high winds, is being spread a further 500,000 cu. yd. of quarry waste to keep it in position. Railway workshops are to be erected on one area, part of which was once a rubbish dump.

The first part of the work will be concentrated on the workshops area, and the second part of the scheme, the sorting and marshalling yards, will be left until later. When the yards are complete there will be more than 50 miles of track in the area with more than 500 sets of points and crossings. There will also be four bridges carrying railway tracks across the canals and a further road bridge for internal use. Part of the scheme, which will be embarked upon as soon as possible, is the building of 200 houses to provide accommodation for ex-service employees on the works.

Fully 50 per cent. of the native labour now employed consists of ex-servicemen, and the proportion among the European workers is even higher. This work, which is not expected to be completed in much less than seven years, is only part of the railway construction planned in Natal. There is also the building of the new Durban Station, the quadrupling of the line between Durban and Booths, and the doubling of the main line as far as Ladysmith, in the course of which advantage will be taken of the opportunity to straighten many bends, while some new tunnels probably will be driven to ease the gradients.

INDIA

Accident on Bengal Assam Railway

The 10 down "Surma Mail" met with an accident between Talsahar and Bramhanbaria Stations in the early morning of September 9, the engine and three coaches turning over and three other coaches being derailed. It is reported that seven persons were killed and 32 injured.

Strike on South Indian Railway

After a fortnight's notice of a general strike served on Mr. J. F. C. Reynolds, General Manager of the South Indian Railway, a large group of S.I.R. employees went on strike from August 25. The strike took place in spite of every effort for settlement on the parts of the General Manager, the President of the Labour Union, and the Premier of Madras.

The General Manager explained at a press conference that the strike notice contained some 26 demands over and above those already referred to the Pay Commission and the Adjudicator, who are examining issues such as hours of work and relief percentages. It was stated officially that out of a total of 48,500, about 20,600 employees struck work on August 25. At first all train services over the S.I.R. were cancelled with the exception of some goods trains carrying essential foodstuffs and newspapers, which were run under armed guards. Subsequently there was a progressive improvement from day to day and a certain number of passenger trains was run. The strike was called off on September 22.

Interim Relief to Railwaymen

The General Secretary of the Advisory Committee of the All-India Railwaymen's Federation received on July 31 a communication to the effect that the Railway Board has accepted a compromise formula for interim relief to railwaymen suggested by the committee. According to the new formula, all railwaymen drawing a monthly salary up to Rs. 250 will receive a flat rate increase of Rs. 4½ a month with retrospective effect from July 1, 1945. This increased pay will cost the Railway Board an immediate expenditure of Rs. 91·3 millions (£6·8 millions) and an annual recurring expenditure of Rs. 52·1 millions (£3·9 millions). The federation's request for relief was reported in *The Railway Gazette* of August 9.

Refrigerator Vans

Four insulated vans have been put into service on the Bombay-Anand section on the Bombay, Baroda & Central India Railway to facilitate the transport of milk to Bombay. It is understood that the Railway Board is considering the construction of refrigerator vans for the transport of perishable goods.

CHINA

Railway Bridges from Great Britain

U.N.R.R.A. is to send railway bridges to China to relieve the serious rail communication problem which is preventing food and medical supplies being sent to the famine-stricken provinces. The bridges will be shipped in component parts and assembled at Shanghai and Canton by specially-briefed engineers. In all, 904 complete bridges of 42,300 tons, valued at £2,115,000, will be shipped from Britain. All the bridges are of British manufacture, and will have high priority when U.N.R.R.A. lifts the ban imposed on supplies to China. This ban was brought into effect on July 10 in order to alleviate the congested port facilities at Shanghai. It is expected that the ban will be removed in October.

WESTERN AUSTRALIA

Preliminary Financial Statement

The comparative statement of working of the Western Australian Government Railways, issued by the Commissioner of Railways (Mr. J. A. Ellis) in advance of his annual report, discloses a deficit on the year, after paying working expenses and interest, of £959,804. For the previous year the deficit was £538,509. Earnings for the year totalled £4,106,718, a decline of £169,532, while working expenses were £4,026,706, a rise of £262,416. The excess of earnings over working expenses was £80,012, towards an interest bill of £1,039,816. The percentage of working expenses to earnings was 98·05 per cent., compared with 88·03 per cent. for 1944-45.

With the end of hostilities, the volume of traffic handled on behalf of the defence services naturally has shown a considerable decline. The haulage capacity thus freed has been used for civilian traffic, but at lower freight classifications, as indicated by the fact that a greater train-mileage was run, and there was an increase in ton-mileage, but earnings showed a substantial drop. On the other hand, working expenses have risen to a new peak, mainly through reasons beyond the control of the administration, such as increases granted under industrial awards, and increased cost of fuel. The return of men from the fighting services, and their rehabilitation in the department, also is affecting the expenditure.

Traffic Statistics

Train-miles run during the year totalled 6,409,278, an increase of 146,581. Earnings per train-mile dropped from 163·88d. to 153·78d., while working expenses per train-mile rose from 144·26d. to 150·78d. Passenger journeys dropped from 18,099,395 to 17,136,230, a reduction of 963,165. This business is affected by the smaller number of Servicemen and women travelling, and also the reduction of staff previously engaged in munitions manufacture and other war industries.

Goods and livestock earnings dropped from £2,759,288 to £2,673,974, although the ton-mileage of paying goods and livestock hauled was greater, namely, 351,832,853 ton-miles for 1945-46 as compared with 334,797,395 for 1944-45. There was a greater proportion of low-freighted traffic as defence service traffic declined, and its place was taken by wheat, fertilisers, and so on.

The mileage of line open at June 30, 1946, was 4,381. The population per mile of railway was 133 persons. The average staff employed during the year was 8,598, an increase of 236.

CANADA

Steel Shortage at Calgary Depot

Modernisation of the Canadian Pacific Railway locomotive depot at Calgary, Alberta, by construction of a $500,000 direct steaming plant, is held up by shortage of steel. Installation is about a quarter completed, but there appears little chance of its coming into operation this year. The plans for the depot were described in *The Railway Gazette* of June 21.

NEW ZEALAND

Preliminary Work on Rimutaka Tunnel

To do away with the long railway incline over the Rimutaka mountain ranges between Wellington and the fertile Wairarapa district, on the Wellington-Masterton line, the New Zealand Government intends driving a tunnel through the mountains. The tunnel, which will be just on 5 miles long, will be the second longest tunnel in the Dominion; the Otira Tunnel is 5 miles 25 ch. The tunnel forms part of a ten-year regional development plan and it is estimated that it will take from 5 to 6 years to build. Plans for the deviation date back to before the war, and were outlined in *The Railway Gazette* of September 23, 1938.

Preparations are being made to work on an access road to the northern portal of the tunnel on the Wairarapa side. It is estimated that 150 to 200 men will be employed on the job when it is properly under way, and about 80 experienced tunnellers will be required.

During the construction of the Otira Tunnel, trouble was caused through water, and in the Rimutaka Tunnel it is hoped to have the highest point of the floor level in the middle of the bore, so that if

water is encountered it will be able to get away without pumping. Underground construction in New Zealand presents peculiar difficulties because of the history of earth movement, most of the rock formation being crushed or faulted.

The tunnel will by-pass the present Rimutaka incline, worked on the Fell system, which in three miles accomplishes a rise of 869 ft.; the gradient is 1 in 15 and the curves of 5-ch. radius.

UNITED STATES

Application for Higher Rates

Giving evidence to the Interstate Commerce Commission in support of the railways' application for higher freight rates, Mr. Roy B. White, President of the Baltimore & Ohio, quoted figures showing the inroads made into the company's earnings by wage and price increases. Although in the first six months of 1946 the Baltimore & Ohio handled its heaviest peacetime traffic, he said, it lost nearly $17,000,000 as a result of such increases, and was compelled to use up approximately half its cash reserves. Had all the 1946 wage increases been in effect for the full six months, and had the prices of fuel and materials which now prevailed been in effect then, the deficit would have been more than $19,000,000. On the other hand, the temporary freight-rate increase which came into effect on July 1 would have added less than $8,000,000 to the company's revenues, if it had been in effect during the first half of the year.

Mr. R. L. Williams, President of the Chicago & North-Western, said that the freight-rate increases recently authorised would add only $5,410,000 a year to the company's revenues, whereas operating costs were $20,000 higher than a year ago.

All-Diesel Project in Western States

It was announced recently by Mr. Donald V. Fraser, President of the Missouri-Kansas-Texas Railroad, that his system had completed plans for replacing steam locomotives by diesel-electric units throughout the system. The Missouri-Kansas-Texas system comprises 3,253 route-miles and has a stock of 310 locomotives.

New Chesapeake & Ohio Streamliners

Two new *de luxe* streamline trains now under construction by the Edward G. Budd Manufacturing Company for the Chesapeake & Ohio will introduce many new features conducive to passenger comfort and convenience. Among the facilities provided will be a cinema theatre, industrial and art exhibits, telephone service while the trains are in motion, and news teleprinters. The trains will be hauled by steam turbo-electric locomotives, which are being built by the Baldwin Locomotive Works and the Westinghouse Electric & Manufacturing Company.

SUDAN

High Nile Levels

On account of serious flooding of the River Nile adjacent to the Sudan Railways between Shendi and Atbara, trains between Wadi-Halfa and Atbara had to be diverted *via* Halya, Kassala, Gadaref, and Sennar, a detour which added about three days to the overall journey time. The Sudan Government warned passengers that they were likely to be delayed at Wadi Halfa until accommodation was available, the longer journey having made heavy demands on rolling stock resources.

In Egypt there was a risk of the Nile overflowing its banks in certain localities, and measures were taken to remove cereals from the threatened areas to Cairo and Alexandria. The Egyptian State Railways were asked to supply 600 wagons daily for this purpose. During the ten days ending September 14, there was a daily average of 907 10-ton units under discharge at Gabbary (Alexandria) alone.

EGYPT

Passenger and Goods Earnings

The number of passengers of all classes carried in 1944-45 and 1945-46, and the passenger earnings for the two financial years (May 1—April 30) are given in the first table below.

The second table shows the tonnage of goods and number of livestock carried in the two years, together with the receipts.

Passengers	1944-45		1945-46	
	No.	£	No.	£
1st class	2,365,317	884 472	2,130,438	338,050
2nd class	9,245,351	1,169,040	9,635,418	1,375,961
3rd class... ...	48,134,941	3,871,102	48,802,233	4,911,356
Total	59,745,609	5,924,614	60,568,089	5,625,367

Goods	1944-45		1945-46	
	Tons	£	Tons	£
Merchandise	7,547,795	5,883,421	6,322,242	4,918,973
Porterage	—	136,188	—	128,372
Railway material ...	1,580,214	224,776	1,604,509	235,436
Demurrage	—	23,130	—	26,181
Total ...	9,128,009	6,267,515	7,926,751	5,308,962

Livestock	1944-45		1945-46	
	No.	£	No.	£
	572,995	104,755	550,364	111,807

FRANCE

Reconstruction of Rhine Bridges

After the recapture of Strasbourg, French and American army engineers threw a provisional railway bridge across the Rhine close to the wreckage of the Kehl road bridge. Completed on June 30, 1945, it is a single-track structure carrying from forty to fifty trains daily. M. Maury, Ingenieur Principal du Service de la Voie et Bâtiments, S.N.C.F., Strasbourg, has revealed that parts of the bridge were prepared in 1939 and hidden throughout France when the Germans swept into Alsace, hence the swift construction, which occupied only 69 days.

The bridge, however, obstructs navigation south of Strasbourg, and as a result of Swiss representations work is to begin immediately on raising its entire roadbed by more than three feet to enable barges to pass. Plans for a permanent bridge, a mile and a quarter upstream and clear of the port, are being prepared. The difficult task of clearing the wreckage of the Kehl road bridge is proceeding; a new road bridge will be built on the same site.

Deficit in Paris Transport System

The Paris passenger transport system, comprising the Metropolitan underground and the Sceaux suburban surface lines, together with the Paris omnibuses, shows a total deficit for 1945 of fr. 1,740,759,309 (or £3,626,582 at fr. 480 for the £). A member of the Paris Municipal Council has called attention to the fact that the Metropolitan and Sceaux lines show a profit of fr. 261,871,842 (or £545,566), so that the huge deficit is due solely to the omnibus services. Maintenance costs, wages, pensions, and other charges account for the deficit on these services, which was increased last year by the re-opening of numerous routes, involving heavy expenditure in renewal and repairs of material, as well as an increased wages bill, although fares were still held low.

CZECHOSLOVAKIA

Locomotive Building Progress

The Ministry of Information in Prague recently issued some details of post-war progress in locomotive building. It was stated that before the war the Skoda Works in Pilsen turned out an average of three locomotives a month, including both home and export orders. Only one month after the liberation of Czechoslovakia, in June, 1945, these works received an order for 40 locomotives. In spite of heavy damage caused by bombing during the war, the order was taken in hand. One locomotive left the factory in December, 1945, but, because of shortage of injectors, further delivery did not take place until March, 1946, when six engines were handed over, and this was followed by eight in April, 11 in May, and nine in June. Subject to a regular supply of injectors, which are now being produced in Brno, the present production can be stated as an average output of 10 locomotives a month.

As the war damage has now been repaired, the locomotive shop transferred to a new building, and new plant and improved methods of working are available, it is expected that production soon will be stepped up considerably. Orders accepted since the war now amount to 120 locomotives for goods trains, and 40 for express trains. The two-year economic plan recently announced by the Government provides for a yearly production in the country of 290 locomotives, of which the Skoda Works alone is expected to produce 240, in addition to engines constructed for export.

AUSTRIA

Rates and Fares to be Increased

The financial position of the Austrian Federal Railways was discussed recently by the financial committee of the Austrian National Assembly, in connection with a Bill introduced by the Austrian Government for an increase in railway fares and rates. Agreement was reached on an increase of 20 per cent. in passenger fares and goods rates. In addition, a "reconstruction levy" is to be introduced, which will amount to 50 per cent. of the increase. It was stated that the working receipts of the Austrian Federal Railways are expected to total Sch. 246,000,000 in the current year, against a working expenditure of Sch. 619,000,000, the working deficit thus being estimated at Sch. 373,000,000.

The Development of American Railway Research*

Investigation of problems has been long carried out by both railways and manufacturers

THERE are few industries whose research development has not contributed to railway progress, because the railways buy the products of almost every industry. As the railways have had to concentrate on improving and expanding their transport service, it has left them little opportunity to develop the manufacturing facilities for their own needs. As a result, a railway supply industry has grown which manufactures all kinds of railway equipment up to complete locomotives and rolling stock. All these manufacturers undertake research, many in their own laboratories, for the improvement of their products.

Nevertheless, the railways themselves conduct or inspire much research. As early as 1873 the Master Car Builders' Association arranged competitive brake trials which culminated in the Burlington tests of 1887 and the adoption of the air brake as standard in America. The railways stimulated progress among brake manufacturers rather than in their own direct research. Between 1922 and 1931 the Interstate Commerce Commission set forth brake specifications and superintended tests of air brakes designed by manufacturers. The commercial brake developed by the manufacturers has been installed now on about half the wagons on American railways.

The Association of American Railroads has conducted research into draw-gear at its testing laboratory at Purdue University. The Association of Manufacturers of Chilled Car Wheels has undertaken intensive investigation, covering metallurgy, design, and manufacturing processes. Wrought-steel wheels, car couplers, and cast-steel freight wagon bogies have been the subjects of much research.

At the St. Louis exhibition of 1904 the Pennsylvania Railroad installed a locomotive test plant, since removed to the Altoona works. On it, many tests have been initiated, including fuel consumption, steam production, cylinder horsepower, and drawbar pull, besides data pertaining to the internal functioning of the locomotive. Such data have guided many inventors of locomotive improvements.

Developments in Track and Signalling

The first organised attack on the problem of rail design and manufacture was undertaken in 1887 by the Roadmasters' Association of America. Since 1900, when the American Railway Engineering Association was founded, many phases of track and roadbed construction have been investigated; this association sponsored the late Mr. Elmer A. Sperry's successful researches into the cause of rail fissures. Periodical rail checks are carried out now by detector cars which record fissures and other defects even in the incipient stage.

Railways and manufacturers jointly financed research into rail fissures and their avoidance, which began in 1933 at the University of Illinois. It was discovered that transverse fissures were caused by rapid cooling of rails on open racks at the rolling mill, and this shortcoming has been reduced substantially by controlled cooling in enclosed boxes. From research into sleepers, which began soon after the building of the first American railways, developed the wood-preserving industry, with the result that the service life of treated sleepers is now 25 or more years, or five times as long as that of the untreated timber.

Track circuiting and signal lighting have been long studied. Since the Interstate Commerce Commission in 1922 ordered automatic train control on 49 railways, there has been much research in this field. The continuous inductive system led to the application of signals in the locomotive cab. The retarder for hump shunting has been developed by signal manufacturing companies.

Other Contributions to Research

Purdue University began in the 1890s tests relating to locomotive draught, and superheated compared with saturated steam; the latter tests were conducted on the Purdue locomotive testing plant. The so-called Master Mechanics' front-end was evolved from these tests. Many test facilities owned by the Association of American Railroads are located at Purdue; they include air-brake-hose testing apparatus, drop-testing, and brake-shoe testing machines, an air-brake test rack, and a draw-gear test laboratory.

The Engineering Experiment Station at the University of Illinois also has a locomotive test plant, but this institution is better known for its train-resistance and tonnage-rating tests and its work on track stresses. Other railway improvements have originated in industries not devoted exclusively to the railway market. For instance, low-alloy high-strength steel and aluminium have reduced the weight of rolling stock.

Rubber has been adapted to the insulation of passenger coaches and as cushioning in passenger coach draw-gear. Roller bearings are used widely in locomotives and coaches. The internal-combustion engine has established itself firmly as a railway motive agent.

Recently, the range of research conducted by the railways themselves has widened. Crank-pin tests are being made by the Timken Roller Bearing Company for the Association of American Railroads. Dynamic fatigue testing of full-size welded castings has enabled restrictions to be lifted on the welding of fractured cast-steel bogie frames and bolsters. In March, 1944, the report was issued of the joint investigations on the Chicago & North Western Railway of the Mechanical and Engineering Divisions of the Association of American Railroads into the counterbalancing of reciprocating parts on locomotives. It will influence future locomotive design and the improvement of existing locomotives to give smoother riding and reduce track stresses at high speed.

The Association and individual railways are conducting studies of such track problems as butt welding of rails and rail fastenings. Other rail matters under consideration are the redesign of rail sections based on present data relating to failures in the web section of rail, and pressure grouting of the roadbed with cement to combat the accumulation of water under the track.

Popular interest is greatest in the application of wireless to train communication, now being developed. Mr. Clyde Williams, Director of the Battelle Memorial Institute, was appointed last March technical consultant to advise the Association of American Railroads on research matters connected with technological methods and processes.

* Abstract of an article: "Railways Roll on Research," by C. B. Peck, in the January, 1945, issue of *Scientific American*.

ROAD TRANSPORT PRESS CONFERENCE.—At a recent Press Conference at Ashford, Kent, held by the East Kent Road Car Co. Ltd. and the Maidstone & District Motor Services Limited, the General Manager of the first-mentioned company traced the history of road transport from the covered wagon of 300 years ago to the 30 m.p.h. double-deck bus of today. He said that a bus ride was about the only thing that cost today substantially the same as 40 years ago, despite the soaring maintenance costs of recent years. It had not been proved that the turning of the bus industry into a bureaucracy would give better service to the public. Transport should be run by experts with practical knowledge and experience, who understood the needs of the locality they served.

RATES FOR CONVEYANCE OF BRICKS BY ROAD.—The Road Haulage Association announces that the following brick rates have been agreed by the Association and Ministry of Transport:—

Miles	Rate per ton	Miles	Rate per ton
	s. d.		s. d.
2	4 0	65	18 11
4	4 4	70	19 8
6	4 10	75	20 4
8	5 4	80	21 0
10	5 10	85	21 8
12	6 4	90	22 4
14	6 10	95	23 0
16	7 5	100	23 11
18	7 11	105	24 6
20	8 6	110	25 0
25	9 9	115	25 7
30	11 0	120	26 2
35	12 5	125	27 1
40	13 9	130	27 11
45	15 2	135	28 10
50	16 4	140	29 9
55	17 5	145	30 8
60	18 2	150	31 6

There is a 20 per cent. increase on these rates for Devon and Cornwall, Western and South Wales. (This has not yet been agreed with the Ministry of Transport). The rates are based on costings examined by both parties, and hauliers have been urged strictly to adhere to them.

IMPROVED L.N.E.R. SUBURBAN SERVICES.—From Monday next, October 7, the L.N.E.R. will make several additions in the mornings and evenings to the train service between Liverpool Street, Gidea Park, and Shenfield. On weekday evenings there will be a regular-interval service of two trains an hour to Gidea Park, and two to Shenfield, beginning at 7 p.m. (4 p.m. on Saturdays). The Fairlop loop line will be served by trains at half-hour intervals in each direction after 7 p.m., Mondays to Fridays, and 4 p.m. on Saturdays. Bishops Stortford, Audley End, and Cambridge will have a late train for theatregoers on Thursdays and Saturdays only, leaving Liverpool Street at 11.50 p.m. Improved services for outer suburban stations between London and Cambridge will take effect also on the Kings Cross route, where several existing trains will be accelerated and new connecting trains will be run to serve intermediate stations between Hitchin and Cambridge. A new late train for theatregoers will leave Kings Cross at 10.45 p.m. on weekdays for Welwyn Garden City, Hitchin, Biggleswade, Sandy, and St. Neots.

Air Compressors for Electro-Pneumatic Signalling

Compressed air supply for London Transport from unattended substations

THE compressors which provide power for operating under electrical control, the points, train stops, and—where still in service—the semaphore signals on the London Underground lines, are housed in many cases in unattended substations, and this makes it essential to use a design that will require only occasional attention from the maintenance staff.

Reliable operation, however, is only one of the essentials. Another is the need for clean, dry air, to eliminate any possibility of the magnet-operated valves of the air motors becoming choked with oil deposit or ice. Both of these requirements have been met by the Sentinel series 45 B.S. two-stage crosshead type compressors, made by Alley & MacLellan Limited, of Glasgow.

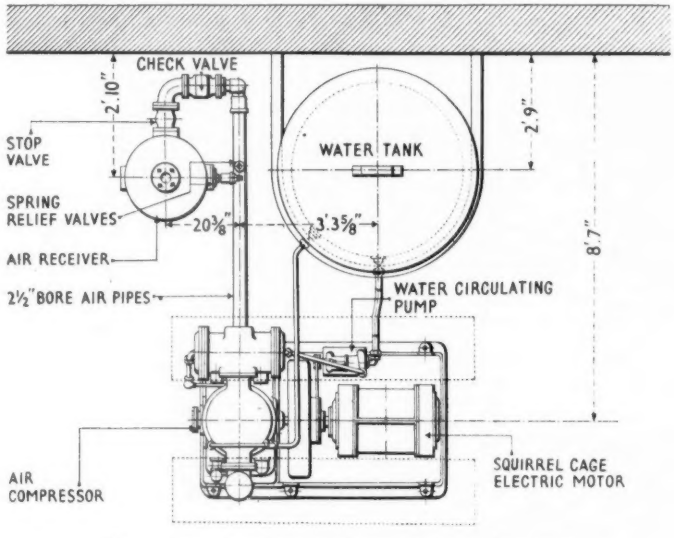
In this design, the general arrangement of which appears in the accompanying diagrams, the piston is of the differential two-diameter type, the upper, or full, diameter acting as the low-pressure cylinder, and the annular space formed by the cylinder wall and the small diameter serving as the high-pressure cylinder, with an efficient inter-cooler between them. Lubrication to all bearings is provided at pressure by a plunger pump driven from the crankshaft, the oil for this service being stored in the crankcase and filtered on its way to the pump. A large-capacity mechanical lubricator takes care of cylinder lubrication.

This design is very compact and simple, giving two-stage compression in one line of parts. The cylinder is isolated entirely from the crankcase by the crosshead, and the only oil mixing with the air being compressed is that fed to the cylinder by the mechanical lubrication. As the bottom of the piston is open to atmosphere, no pressure gland is necessary, the only gland used being the oil-scraper gland, readily accessible, in which the piston rod slides.

A pressure regulator takes the load off the compressor when maximum pressure is attained, and restores it when pressure drops by approximately 3 lb. per sq. in.; working pressure is 65 lb. per sq. in. The compressors are driven by direct-coupled squirrel cage motors, with "direct on" starters operated by remote control. There is a tank for cooling water, and a small centrifugal pump, driven from the compressor, maintains a constant circulation in the cylinder jackets and inter-cooler. A receiver is coupled to the compressor by piping and an appropriate arrangement of valves.

ing cylinder lubrication and increasing the amount of oil-free air delivered.

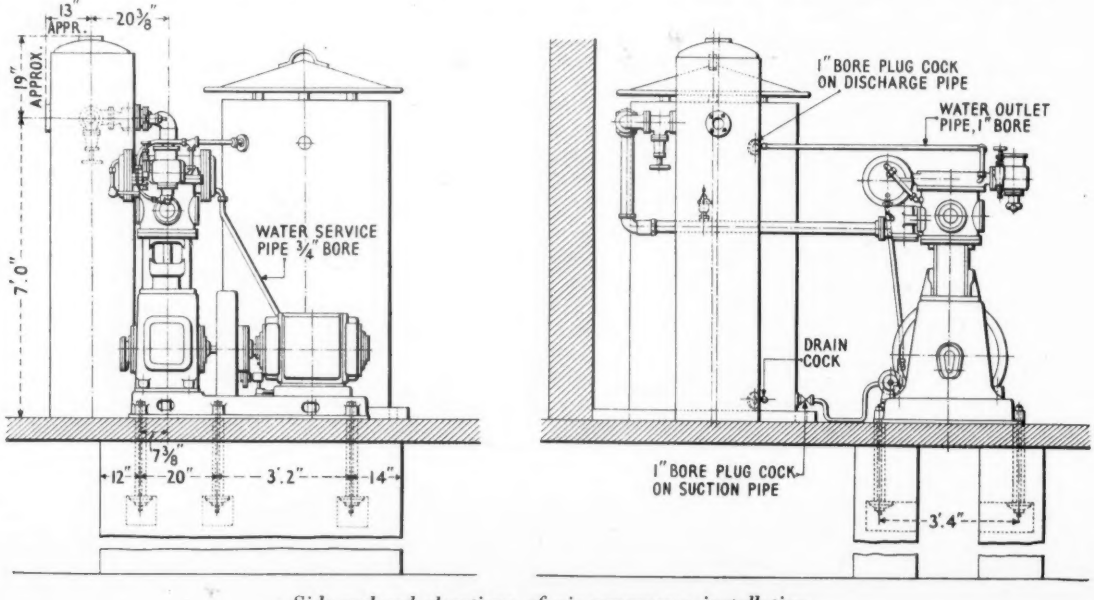
These piston rings are likely to become standard, although even with lubricated cylinders the danger of oil being found in the compressed air is very remote. With two compressing and inter-cooling stages, the air is delivered at a much lower temperature and contains much less moisture than would be possible with single-stage compression, but as a further precaution advantage is taken of the air currents in the tunnels to form grids in the run, with automatic traps, any moisture forming being drained automatically.



Plan view of compressor layout and cooling tank

The arrangement shown in the diagrams is that common to most substations, but some departures from it are: (1) automatic starters, which stop the compressor when maximum pressure is reached and re-start it on a pre-determined pressure drop; and (2) the use of carbon piston rings, eliminating cylinder lubrication and increasing the amount of oil-free air delivered.

Compressors of this type, of which 87 have been supplied by Alley & MacLellan Limited, for use with electro-pneumatic signalling on the Underground lines, are used on extensions of the London Transport system described in our recent publication, "Improving London's Transport."



Side and end elevations of air-compressor installation

Civilian Services in the British Zone of Germany

The timetable dated July, 1946, covers nearly 12,000 route-km.

OF over 12,600 route-km. of railways in the British Zone of Germany, only 1,050 km. were in operation just over a year ago (June, 1945). Since then the rehabilitation of lines has been rapid, and in February, 1946, the first consolidated timetable for the zone appeared, already containing a substantial number of services.

Five months later, on July 1, the second issue was published. This has swollen to some 236 pages covering nearly 12,000 route-km. which are now being worked. Repair of rolling stock, however, has not progressed so favourably, and has required the utmost utilisation of the available carriages and locomotives. Consequently, all trains are crowded to capacity, and occasionally one can still see people travelling on buffers and running boards. Even the recent 100 per cent. increase in fares has done little to reduce travel.

Seven small district maps and one large folding map of the British Zone are included in the timetable. The first thirty pages deal with long-distance connections, not only in the zone, but extending down to Southern France and Switzerland. This seems very incongruous in a country where mere inter-zone travel requires special permits. The accompanying diagram shows through connections.

Although the table deals primarily with the British Zone, it includes a considerable number of schedules for the northern half of the French and American Zones. No connections to the Russian Zone are indicated, with the exception of the "Nord Express," which runs thrice weekly to Berlin. The timings of this train within the zone are of interest. Leaving Paris (Nord) at 2.30 p.m. (Western European Time) it arrives at Aachen at 3.19 a.m. After a 40-min. stop for passport and customs control, it continues to Cologne. The distance of 70 km. is covered in 91 min. Cologne is left at 5.51 a.m., and further stops are then made at Wuppertal, Hagen, Hamm, Bielefeld and Bad Oeynhausen (Rhine Army H.Q.). Hanover is reached at 11.50 a.m. On three days the Berlin portion leaves Hanover at 1.10 p.m. and is shown in the timetable as far as the inter-zone boundary at Helmstedt. On Sundays, Wednesdays, and Fridays, the Copenhagen portion leaves at 12.20 p.m., and with one intermediate stop, at Uelzen, reaches Hamburg Central at 3.47 p.m. The Danish frontier, at Flensburg-Pattburg, is reached at 7.49 p.m. It is in-

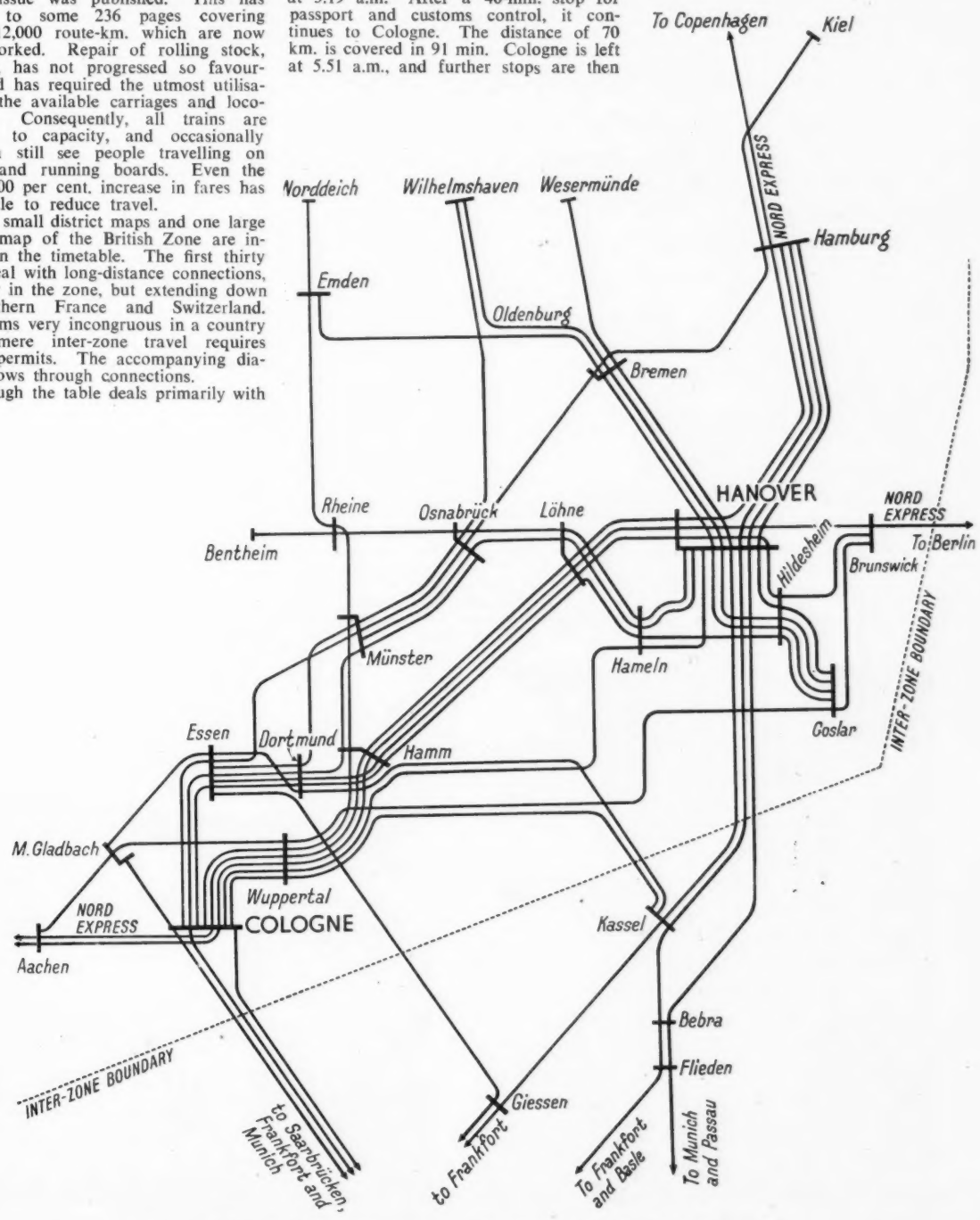


Diagram showing through connections in the British Zone of Germany

teresting to note that the return of the Danish portion to Aachen takes exactly two hours longer than the down train. Although this international train is shown in the public timetable, no point-to-point travel within Germany is permitted on it.

A Typical Journey

Assuming a German wanted to make the journey from Aachen to Flensburg, and had obtained his permit to travel on long-distance trains, he probably would leave at 5.44 p.m. on train E207 and travel *via* Krefeld to Duisburg. There he would wait for D91, the direct train from Cologne to Hamburg *via* Hamm, Osnabruck, and Bremen. Provided that this train is punctual and arrives in Hamburg-Altona on a Monday, Wednesday, or Friday, he will just have time to catch the 8.25 a.m. "all-stations" to Neumunster, where he changes into yet another train and arrives at his destination at 2.17 p.m., having covered the distance of 685 km. at an average travelling speed of 34 km.p.h. This, however, is rather lower than the average speed of the better trains in Germany today, which may travel as fast as 60 km.p.h.

Through trains run into the American and French Zones of Occupation, two of these being Osnabruck-Munich and Hamburg-Basel D.R.B., both taking nearly 24 hr. On many of the less important lines, no Sunday services are provided. The following serves as an illustration of train frequencies on some better-known routes:—

Bremen-Hanover	... 10 trains (each way)
Hanover-Hamm ...	... 14 trains
Hamm-Dortmund	... 26 trains

The timetable is completed by 4 pages dealing with steamer services to the Friesian Isles, various ferries, and railway-operated omnibus services. There is also a queer assortment of advertisements dealing with patent medicines, life insurance, and "first-class" restaurants.

New Corridor Third Class Coaches, L.M.S.R.

First batch of 200, *part of* 800 *post-war passenger vehicles*

THE first of 200 new corridor third class coaches has been completed recently in the Derby Carriage & Wagon Works of the London Midland & Scottish Railway. They will form part of the 800 new vehicles which the L.M.S.R. began to build immediately the war ended.

The vehicles are 57 ft. long and 9 ft. wide with seating accommodation for 42 passengers in seven compartments. The tare weight is 30 tons 14 cwt. The side corridor is provided with four entrance doors, of which two are at the end; entrance from the other side is by two doors into the end lobbies.

The bogies are of the standard L.M.S.R. 4-wheel type with 9 ft. wheelbase; they have arc-welded frames and tyred rolled-steel disc wheels with 9 in. × 4⅝ in. axle journals. The suspension comprises two pairs of helical steel bolster springs with the usual eye-bolt and knife-edge swing-beam mounting, and over each axlebox a 5 ft. semi-elliptic laminated spring fitted with rubber auxiliary springs.

The underframe follows the standard L.M.S.R. design; it is fitted with shock-absorbing rubber spring buffers and the usual articulated drawgear. The framing is fabricated by electric arc-welding from standard rolled-steel sections and plates.

A timber floor frame is bolted through rubber cushions to the underframe, and on this the timber body framing is erected. The floor is made up either of tongued and grooved boards or of multiply panels, subsequently covered with felt and brown linoleum. The teak body framing is covered on the outside by 16 s.w.g. charcoal-finished steel panels; the bodyside and end panels are carbon arc-welded together to form as few units as possible before erection. The roof panels are of 16 s.w.g. galvanised-steel arc-welded together and to steel roof carlines and screwed to the timber cantrails.

The seven compartments, 6 ft. 3 in. × 6 ft. 2 in. approximately are furnished with double spring seats and well upholstered seat backs and head rests. The contours of these have been designed after much trial to give maximum comfort in the space available. Accommodation is provided for 42 seated passengers; hinged arm rests are fitted which fold back flush with the seat backs so as to allow space for an additional 14 seats if this should be necessary during peak travel periods.

The seats are covered in cut moquette of patterns and shades to tone with the finishing. The latter consists of plywood panels veneered with natural lacewood, makore, or white sapele with fascias and mouldings in African mahogany. The whole is designed to present easily cleaned flush surfaces, with a cellulose finish.

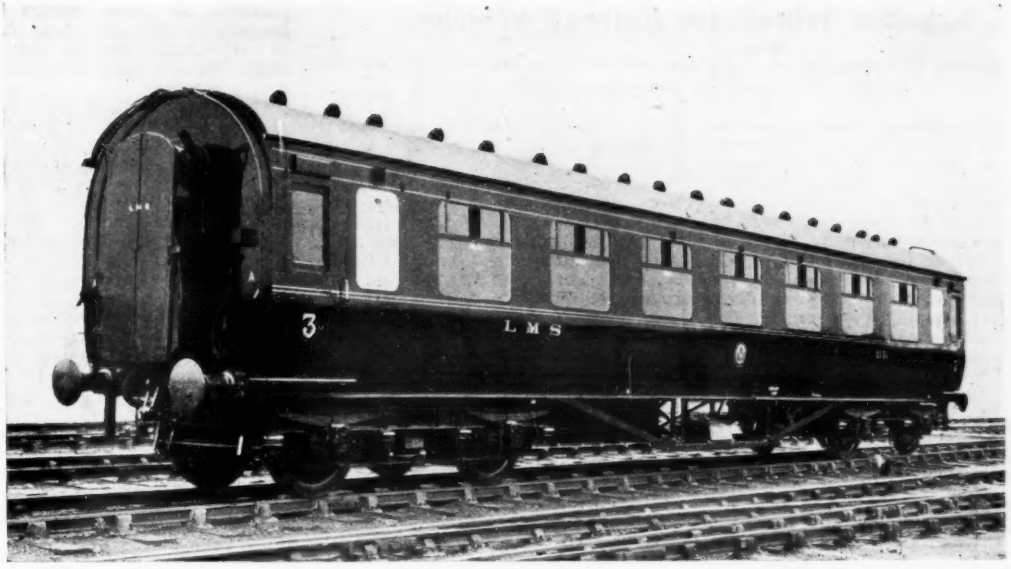
The windows are in accordance with the usual L.M.S.R. standard; they are 4 ft. wide, with a sliding light extractor ventilator of large maximum opening fitted above the fixed window. Corridor windows are arranged opposite the compartments, which have large double sliding doors to the corridors. These doors are fitted with large windows so that an ample field of vision is obtained from the seats at the corridor side.

The compartment doors are also fitted with blinds to the windows, with cable guides which obviate any possibility of their becoming detached and fouling the partitions when the doors are operated, while permitting their adjustment in any position. Special devices are fitted to these doors to exclude draughts. All metallic fittings are finished in lacquered oxydised venetian bronze.

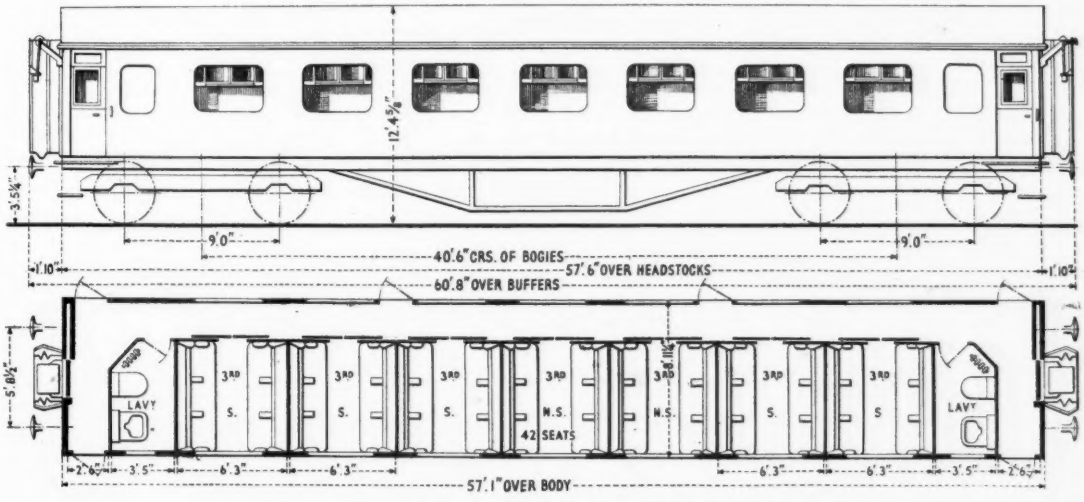
The toilet compartment at each end is furnished with a white fireclay washbasin with hot and cold water supply, and a large mirror above. A white earthenware water-seal W.C. hopper

Corridor in new coach showing windows arranged to allow maximum view

Interior of one of the new third class corridor compartments, which are fitted with arm rests



Exterior view of one of the new third class corridor coaches, L.M.S.R.



Princ.pal dimensions and plan of the coach illustrated above

with " pull-down " flushing handle is also provided. The walls are of flush finish and painted with a matt surface in duck-egg blue. The metallic fittings are venetian bronzed with the exception of those to the washbasins, which are nickel or chromium plated. A Westinghouse 4-column steam radiator is provided for general heating, with a Westinghouse water heater for the basin supply.

The compartments are heated by steam in winter by two 3 ft. gilled tubular heaters of the atmospheric type, one under each seat, which can be controlled by the passengers. Steam heaters are also provided for the corridors, housed in recesses in the bodyside and covered by metal grilles.

The vehicles are ventilated on the extraction principle; two roof extractors are provided for each compartment and one for each toilet, with additional ventilation in the compartment and corridors from the sliding lights above the windows. Each toilet compartment is also fitted, in the bodyside above the window, with an extraction ventilator of a new pattern by which the rate of air change in these compartments will be increased. This has been chosen after a series of tests of several different types.

Electric lighting is provided by the L.M.S.R. standard Wolverton system. This is a single-battery equipment, the regulator of which combines all the necessary switch gear as a unit. Lighting is by 15-watt lamps, of which there are five in each compartment, one being a reflector fitting on the ceiling and four mounted on moulded plastic brackets over the seat backs. The brackets are fitted with opal-glass shades and carry a switch lamp-holder, giving individual control. Two brackets are fixed over the mirror in each toilet. All circuits are protected by non-interchangeable fuses of the cartridge type and each bracket carries an individual fuse combined with a plug. Later vehicles in this order will have a new design of ivory moulded plastic lamp fitting over the seats, and the roof reflector will be superseded by a new plastic fitting to harmonise, and carrying an opal shade. The new fittings will be more compact and more readily cleaned than the old, and the switch control is in a more convenient position.

INCREASED HARWICH—HOOK OF HOLLAND SERVICE, L.N.E.R.—As from September 30 the service between Harwich and the Hook of Holland has been increased by one departure in each direction on weekdays until further notice. The service is maintained by the L.N.E.R. ss. *Prague* from Harwich on Mondays, Wednesdays, and Fridays, returning on Tuesdays, Thursdays, and Saturdays; and by the Zeeland Steamship Company's ss. *Oranje Nassau* from the Hook of Holland on Mondays, Wednesdays, and Fridays, returning on Tuesdays, Thursdays, and Saturdays. There are no sailings to or from the Hook of Holland on Sundays.

XUM

Resilient Wheels for Railway Vehicles

Radial thrusts between tyre and hub are transmitted through rubber inserts, giving better riding qualities and reduced wear on track

IN various countries investigations are proceeding into the design of wheels for railway vehicles to incorporate a shock-absorbing system between the tyre and the hub.

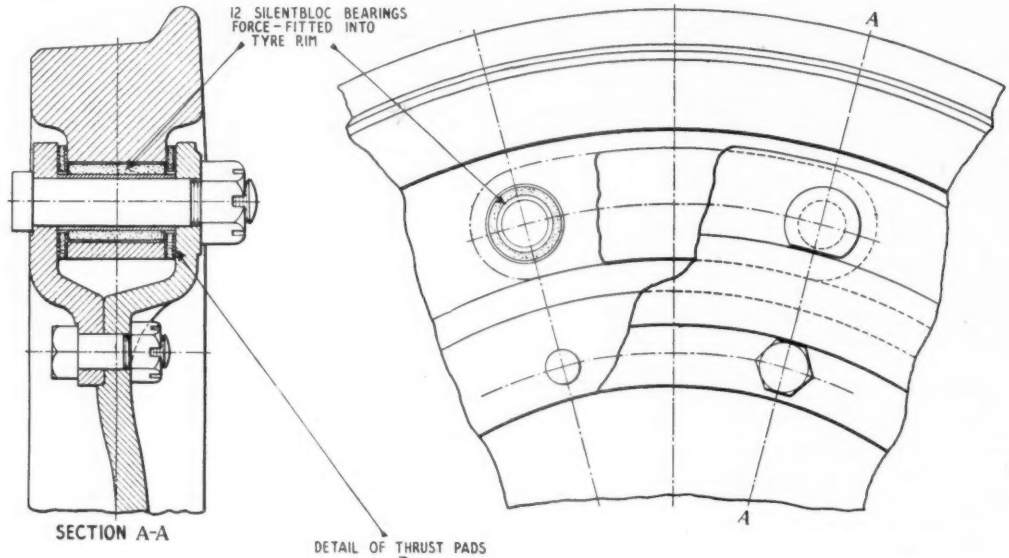
One method by which this particular requirement can be met is by the use of Silentbloc flexible bearings, which already are well known from their application to a wide range of railway and other suspension and anti-vibration problems. The diagram herewith shows a method devised by Silentbloc Limited, Victoria Gardens, such a way that there is no direct metallic contact between the tyre and hub of a wheel.

Radial forces are taken by the Silentblocs, which consist of outer and inner steel sleeves with a rubber sleeve forced in between the two, the rubber insert being of different dimensions from the space between the concentric steel sleeves. In forcing the rubber insert into position, its longitudinal fibres are stretched, and the effort made by the rubber to regain its original shape exerts a radial compression consisting of rubber washers chemically bonded to steel side plates, but it will be appreciated that in the Silentbloc proper there is no bonding of rubber to metal.

The type of resilient wheel described is merely an example of how Silentbloc bearings may be applied, and of their characteristics. Details of fitting can be varied according to the type of wheel construction.

Resilient wheels not only offer improved riding qualities, but effect a saving in the wear-and-tear of permanent way, particularly on sections carrying a heavy multiple-unit electric traffic.

Silentbloc bearings are being used also on railway vehicle brakegear, with a saving in wear caused by vibration. In one



Suggested method of fitting Silentbloc bearings to eliminate metallic contact between the hub and tyre of a wheel

London, W.1, for the use of these bearings in a resilient wheel for railway rolling stock.

In this design the tyre is forged with 12 bosses around the rim, into which the Silentbloc bearings are force-fitted in force of such intensity that relative movement between the inner and outer sleeves can take place within reasonable limits without slip occurring on the elastic ring.

It will be seen from the drawing that side thrusts are taken up by thrust pads application of this type, Silentblocs are fitted to both ends of the links, and by reason of the fact that any relative movement is accommodated in the rubber, play at the pins is taken up as the brake shoe wears, and rattle is eliminated.

ROYAL COMMISSION ON AWARDS TO INVENTORS.—The Royal Commission on Awards to Inventors has issued a pamphlet containing the relevant part of its terms of reference, the rules regulating the procedure before the commission, and general instructions for the guidance of intending claimants. Copies may be obtained from H.M. Stationery Office, or through any bookseller, price 2d. (by post, 3d.). Communications intended for the commission should be addressed to the Secretary, Royal Commission on Awards to Inventors, Somerset House, Strand, London, W.C.2. The commission will not begin its public hearings of claims before November 12, and a further announcement, of the times and dates of sittings, will be made in due course. Details of cases to be heard will be published in the Daily Cause List. The Royal Commission on Awards to Inventors set up in 1919 issued a number of reports, which have been summarised in a pamphlet first published in 1929 and entitled "Statement of the Principles of Assessment Governing Compensation adopted by the Royal Commission on Awards to Inventors." Reprints of this pamphlet may be obtained from H.M. Stationery Office, or through any bookseller, price 6d. (by post, 7d.). The Treasury states that, although in no way bound by the rulings and decisions of the 1919 commission, the present commission in general will have regard to the principles and policy adopted by the 1919 commission as summarised in the pamphlet referred to above.

NEW FACTORIES ON G.W.R.—During 1946 105 new factories have been established in South Wales and 31 in other parts served by the Great Western Railway.

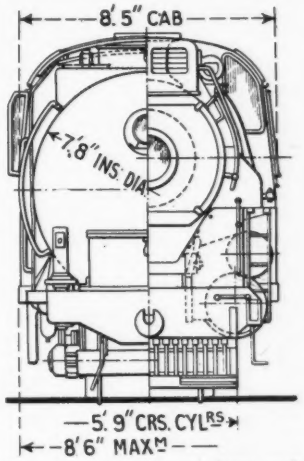
New Light 4-8-2 Locomotives for New Zealand

A simple general purpose machine intended to reduce maintenance costs to a minimum

THE first of 35 new 4-8-2 locomotives for the New Zealand Railways are approaching completion at the Hillside (Dunedin) workshops of the New Zealand Government Railways. These are to be classed "Ja," and will be similar to the existing class "J," of which 40 are in service, 30 in the North Island, and 10 in the South Island. The class "J" locomotives, described fully and illustrated in our issue of March 22, 1940, were built by the North British Locomotive Co. Ltd. in 1939-40. In view of the wartime increase of traffic, the New Zealand Railways were fortunate to receive the complete batch of locomotives, despite wartime risks.

Class "J" was designed for mixed traffic on 50 lb. rails, and with a maximum axle load of 11½ tons has a tractive effort, at 80 per cent. boiler pressure, of 24,955 lb. It is thus intermediate between the class "K" and class "Ka" heavy-duty 4-8-4 locomotives with a tractive effort of 30,815 lb., and the old standard class "Ab" 4-6-2 with a tractive effort of 20,000 lb. Class "J" has proved itself a very capable general-purpose machine, handling all classes of traffic within its capacity with equal success, from main-line express to branch-line mixed, as well as goods trains. The Baker valve gear fitted has required no major repair in six years. It has been decided to put into service a further 35 of these useful locomotives, in this case for the South Island, where the traffic density is less, so that these locomotives can be expected to handle almost all traffic there.

The design of class "Ja" follows that of class "J" closely, so that the 75 locomotives will form a practically homogeneous group. Instead of the two 10 in. × 10½ in. Westinghouse compressors carried at the front end in the original design, the new locomotives are equipped with one 7 in. 80 cu. ft. per min. cross-compound Westinghouse compressor, situated at the side of the boiler barrel immediately in front of the firebox. The main reservoir has been shortened to accommodate this, and additional reservoirs are carried under the casings at the front end, which formerly housed the two compressors. The streamline casings fitted to class "J" engines are not being used in the new class, which will have a chimney similar to the British "austerity" locomotives—a type which has been fitted to other recent New Zealand locomotives. If experiments with the first engine are satisfactory, about half of the new locomotives will be fitted with S.K.F. roller bearings to all axles, both engine and tender, and the remainder will be fitted similarly with Timken bearings.



Dimensional view of front end

The original class "J" locomotives were fitted with floating bushes arranged for grease lubrication on the connecting rods and coupling rods, and also were fitted with adjustable little ends. The present "Ja" class is being fitted with pressed-in bushes arranged for oil lubrication, and thus it will be possible to assess under service conditions and on a satisfactory scale the relative merits of the two methods.

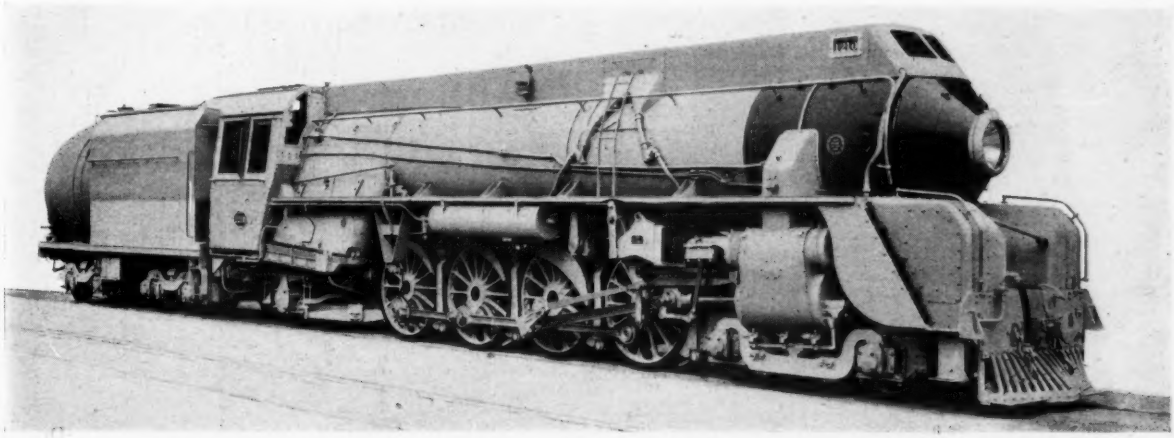
In addition to these modifications a design has been worked out for the fitting of S.K.F. roller bearings to the connecting rod big end and centre coupling rod bearing, *i.e.*, the complete driving crankpin bearing; the driving wheels have been designed with a circular pocket in the balance weight which can be lead filled for the additional balancing required for the roller bearing.

The 35 engines are being built in groups of 10, and the first engines will be in service by June, 1946, so that if the roller bearing application—which is being fitted to one engine only in the first group—should prove successful, the subsequent engines will be similarly equipped. The aim is to provide an engine which will run from shopping to shopping with the absolute minimum of attention. As some at least of these locomotives will be working in the southern part of the island, they will be equipped with a modification of the "Waikato" spark arrester, to permit the use of the local "soft" coal.

Leading particulars of the engines are given in the accompanying engine diagrams. We also reproduce a photographic reproduction of a pencil sketch made by Mr. C. Scott-Hill, a draughtsman in the Chief Mechanical Engineer's drawing office. This pencil drawing, it should be explained, has been done entirely from the working drawings, with some help from photographs of the "J" class, as the class "Ja" engines were not completed, and, in fact, had not been seen by Mr. Scott-Hill when he made his sketch.

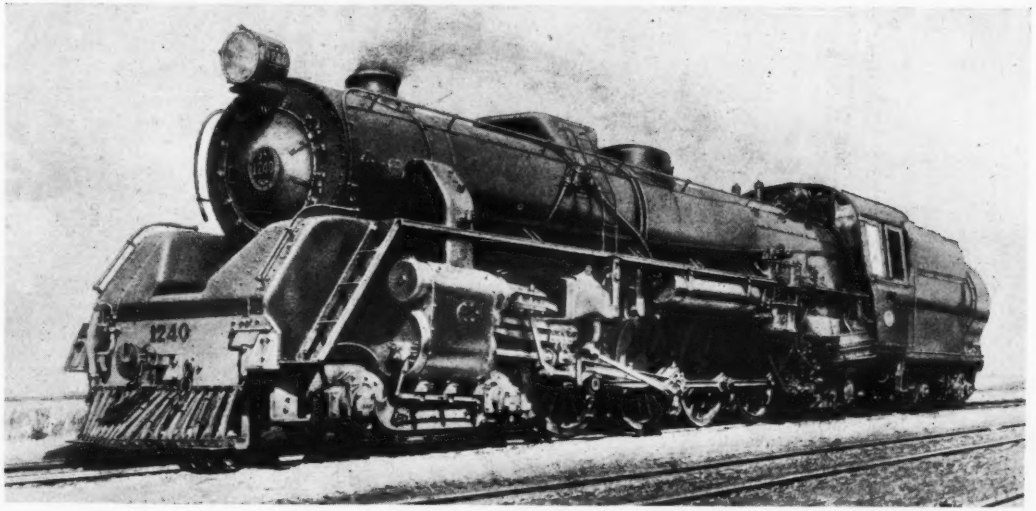
On page 389 we reproduce illustrations of the "K" and "KA" class 4-8-4 locomotives.

INQUIRY INTO CATFORD DERAILMENT, SOUTHERN RAILWAY.—The inquiry into the derailment of a Southern Railway Victoria to Ramsgate train at Catford on September 20 (reported in our issue of September 27) was held by Lt.-Colonel E. Woodhouse, Inspecting Officer of Railways, Ministry of Transport, at the Charing Cross Hotel on October 1. The driver of the train said he felt his engine roll first to the left and then to the right when about 10 yd. from the spot where the first coach came to rest after derailment. He was travelling at about 40 m.p.h. Questioned by the Inspecting Officer on the riding characteristics of "Schools" class engines, he said he did not regard them as lively on the track in the way of rolling or lurching. Another driver of a steam train, who had passed the spot shortly before the accident, said he felt no undue lurching. No defects to account for the derailment were found when the engine of the 2.10 p.m. was examined subsequently. Evidence was given that the track had been examined on the day of the accident and that there was no sign of any sudden subsidence having taken place.



"J" class mixed traffic 4-8-2 locomotive, built in 1939-40, on which the design of the new "Ja" class is based

New Light 4-8-2 Locomotives for New Zealand



Artist's impression of the "Ja" class locomotive

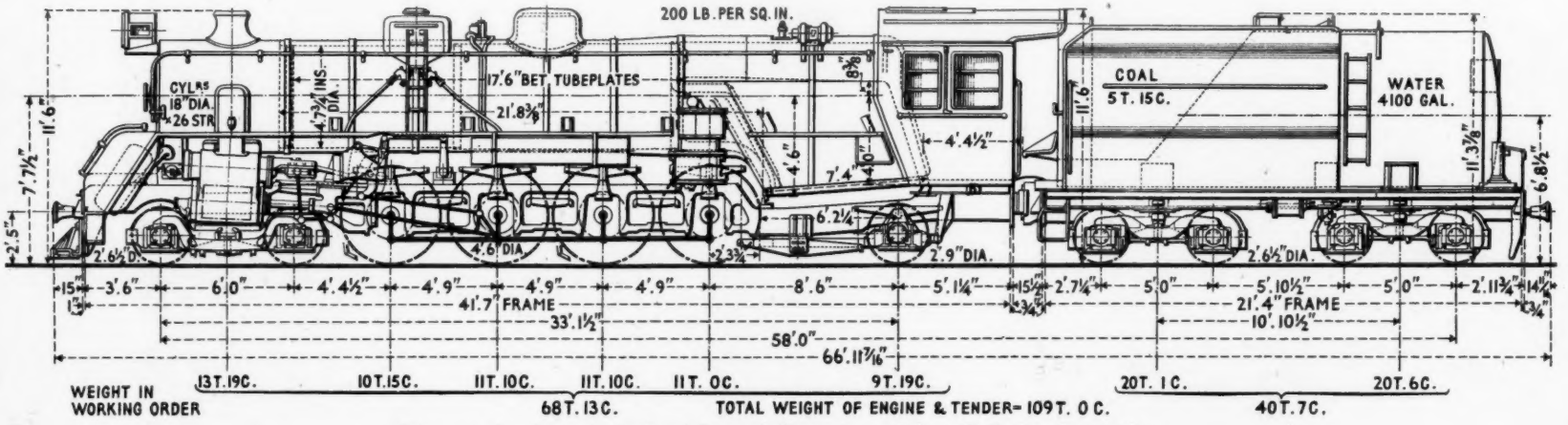
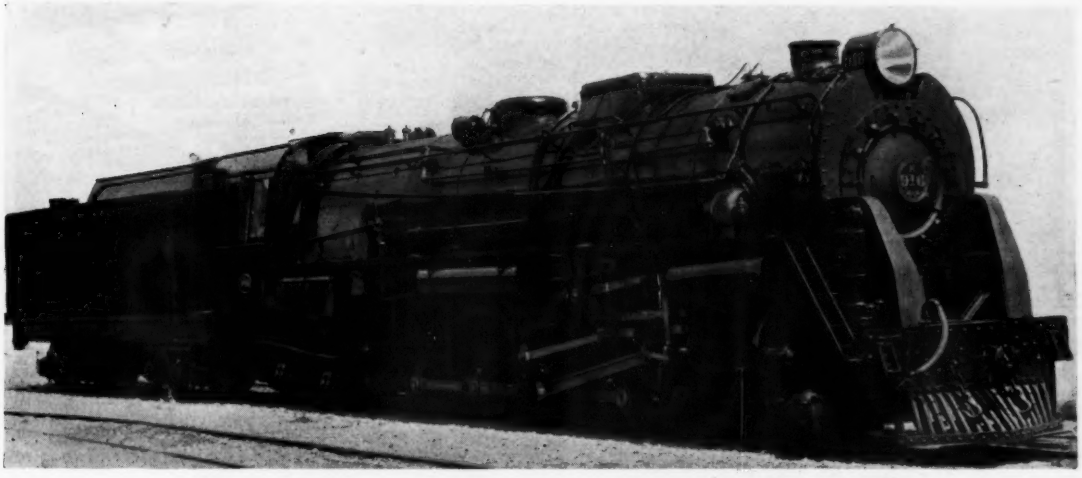
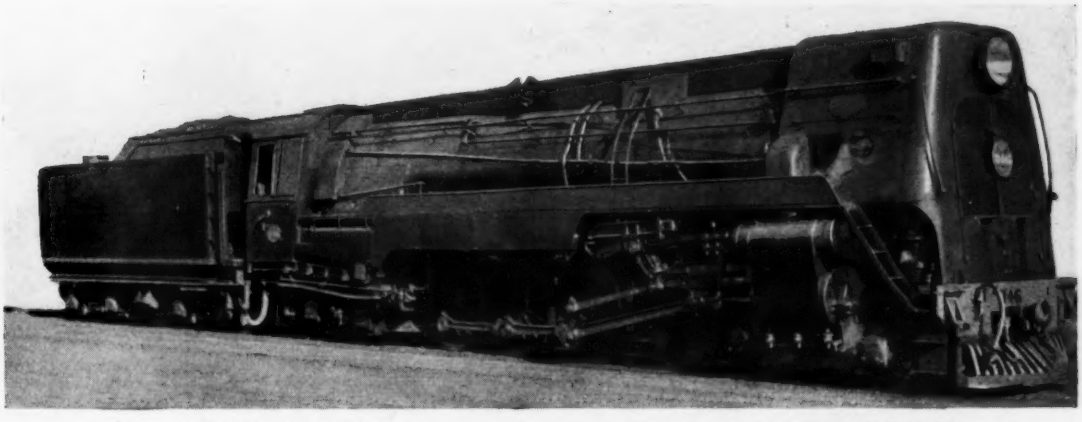


Diagram showing principal weights and dimensions of the "Ja" class locomotive

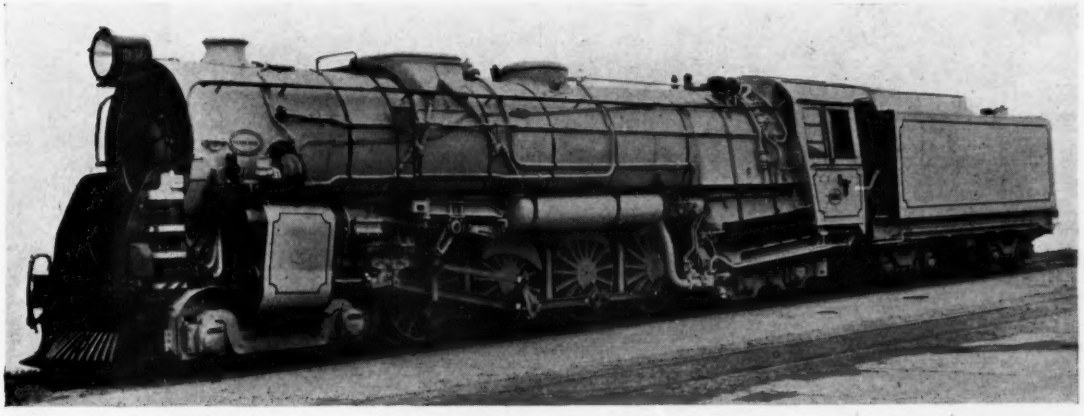
Development in New Zealand Locomotives



"K" class locomotive, the first 4-8-4 type in New Zealand, introduced in 1932



Original "Ka" class" 4-8-4 locomotive, semi-streamline, developed from the "K" class

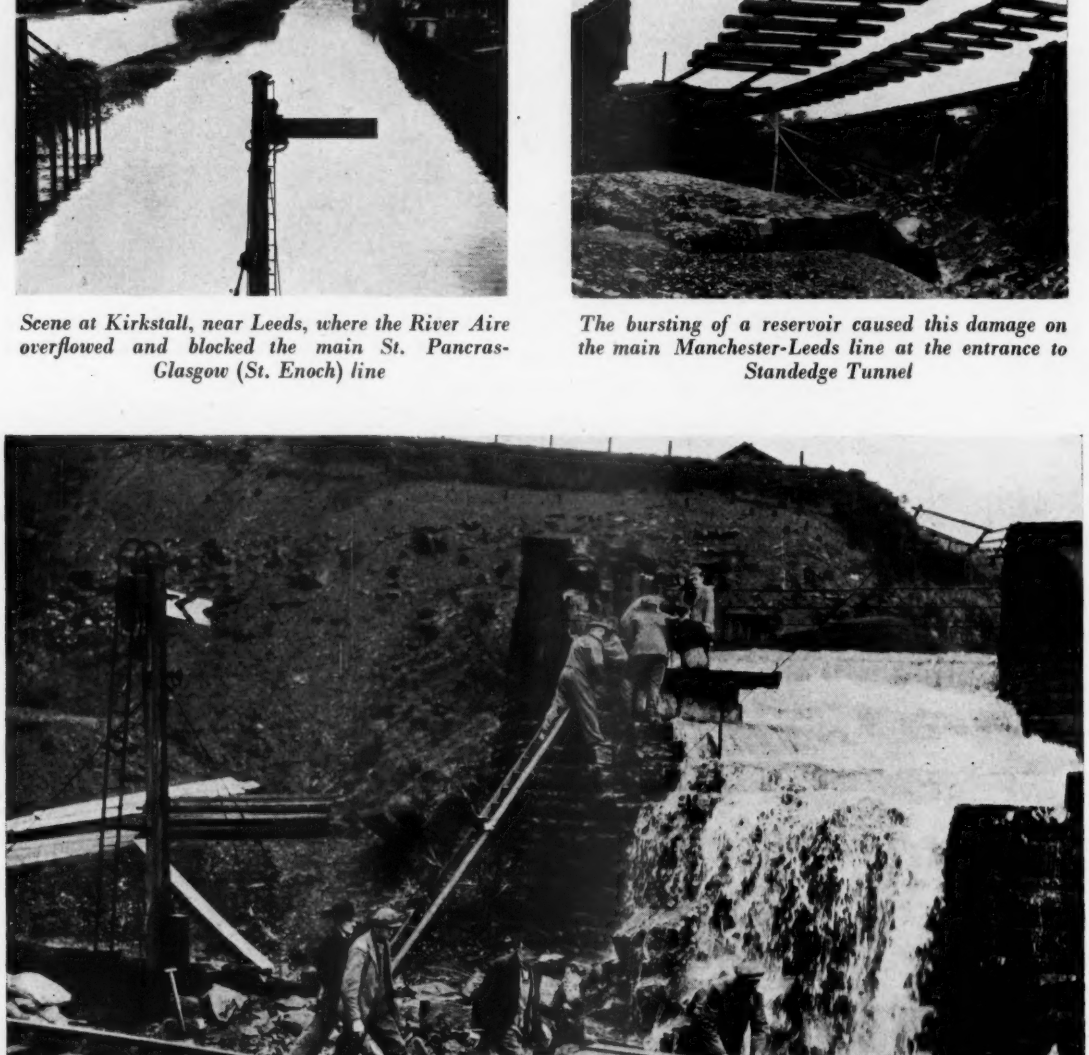


Modified "Ka" class 4-8-4 locomotive, with feed equipment and casing removed

Flood Scenes on the L.M.S.R.

Scene at Kirkstall, near Leeds, where the River Aire overflowed and blocked the main St. Pancras-Glasgow (St. Enoch) line

The bursting of a reservoir caused this damage on the main Manchester-Leeds line at the entrance to Standedge Tunnel



Flooding on the Manchester-Leeds line at the entrance to Standedge Tunnel caused by a burst culvert

RAILWAY NEWS SECTION

PERSONAL

Sir Ronald Matthews (Chairman of the London & North Eastern Railway Company) has agreed to be President of the Railway Benevolent Institution for 1947, and Sir Eustace Missenden (General Manager of the Southern Railway) has agreed to become Chairman of the board of management for that year.

Mr. G. B. F. Neele, General Manager of the Leopoldina Railway, is in England, on a short holiday and for consultation with the board.

Mr. P. L. Falconer, Assistant to the Chief Mechanical Engineer, has been appointed Chief Mechanical Engineer, Central Argentine Railway, succeeding Mr. F. H. Pank, who has retired.

We regret to record the death on September 24, at the age of 71, of Sir William Ashbee Tritton, M.I.Mech.E., J.P., Chairman of William Foster & Co. Ltd., and of Gwynnes Pumps Limited.

M. Marcel Flouret has been appointed President of the Council of Administration of the French National Railways, in place of M. P. Fournier, who has resigned. M. Flouret was Prefect of the Seine Department. During the recent war he was well known in Resistance circles. He was awarded the American Liberty Medal, and last May was promoted Grand Officer of the Legion of Honour.

We regret to record the death on September 28, in his 83rd year, of Mr. J. A. Parker, Engineer, Northern Scottish Area, L.N.E.R., 1923-26.

G.W.R. APPOINTMENTS

Mr. D. H. Hawkeswood, Goods Agent, Bristol, to be District Goods Manager, Exeter, *vice* Mr. J. A. Williams, retired.

Mr. F. G. Smith, Goods Agent, Cardiff, to be Goods Agent, Bristol.

Mr. N. D. Jenkins, Assistant District Goods Manager, Cardiff, to be Goods Agent, Cardiff.

Mr. R. N. Eden, Chief Clerk, District Goods Manager's Office, Newport, to be Assistant District Goods Manager, Cardiff.

Mr. H. W. Howard, Goods Agent, South Lambeth, to be Goods Agent, Paddington.

Mr. A. E. Flaxman, Assistant Goods Agent, Paddington, to be Goods Agent, South Lambeth.

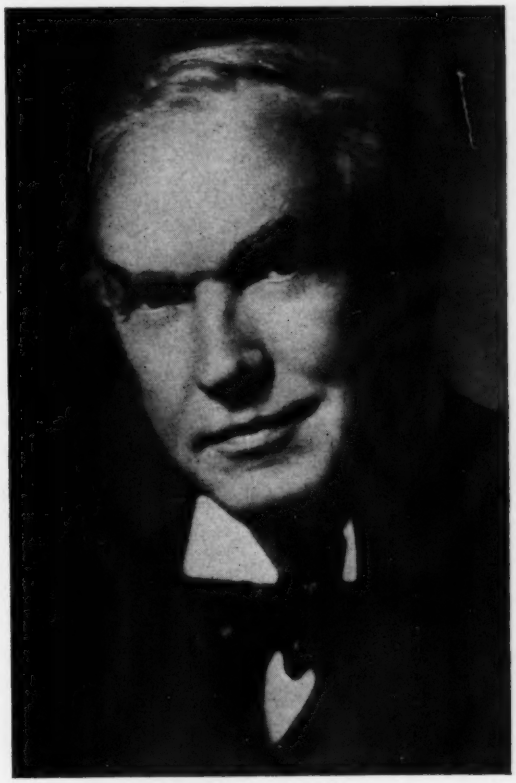
Mr. H. E. R. Bastin, Assistant Goods Agent, Bristol, to be Assistant Goods Agent, Paddington.

Mr. J. H. G. Russell, Chief Clerk, District Goods Manager's Office, Swansea, to be Goods Agent, Llanelly.

Mr. E. J. Smout, Representative, Chief Goods Manager's Office (Working), Paddington, to be Chief Clerk, District Goods Manager's Office, Swansea.

Mr. V. G. A. Pottow, Goods Agent, Victoria & Albert, to be Representative, Chief Goods Manager's Office (Working), Paddington.

Mr. R. Stuart Pilcher, C.B.E., F.R.S.E., M.Inst.T., who, as recorded in our May 24 issue, has been elected President of the Institute of Transport for the year which began on October 1, was recently appointed Chairman of the Traffic Commissioners for the West Midland Area. Previously Mr. Pilcher had been General Manager of the Manchester Corporation Transport Department for over sixteen years, and was due to retire from that position in January, 1947. He went to Manchester from Edinburgh, where he had been General Manager for ten years; previously he had been General Manager, Aberdeen Corporation Tramways, for twelve years, having been appointed to that position at the age of 24. Mr. Pilcher has been actively associated with the Municipal Passenger Transport Association; he is a Past-President, and has been Honorary Treasurer for the past ten years. He has also been the Leader of the Employers' Side of the National Joint Industrial Council for the Road Passenger Transport Industry for ten years, and in that capacity has appeared for the Employers' Side on the occasion of several important arbitrations concerning the wages and conditions of service of 73,000 employees. He is a member of the executive council of the International Union of Public Transport; Chairman of a National Committee on Road Transport Education; a Fellow of the Royal Society, Edinburgh; a foundation Member of the Institute of Transport; Past-President of the Royal Society of Arts, Edinburgh; and Honorary Technical Adviser to the South East Lancashire & East Cheshire Municipal Passenger Transport Joint Advisory Committee. During the recent war he was Chairman and Liaison Officer of the emergency committee representing road passenger transport undertakings in the North Western Region. Mr. Pilcher is the author of many papers and several books on transport.



Mr. R. Stuart Pilcher

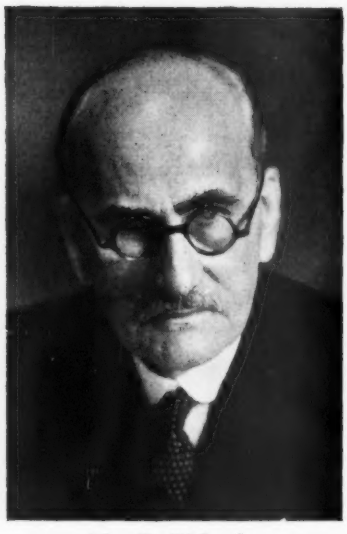
President, Institute of Transport, for 1946-47

Mr. T. E. Batty, who recently retired from the L.N.E.R., with which he held the position of Assistant Freight Rolling Stock Controller, had been seconded since March, 1941, as Chairman of the Freight Rolling Stock Committee. He joined the North Eastern Railway as a goods clerk at Consett in 1896, and, after holding other appointments, was transferred to the Wagon Control Section, General Superintendent's Office, in 1912; he became Chief of that section in 1923. Mr. Batty had a considerable share in building up the L.N.E.R. all-line organisation for freight rolling stock control. In 1927 he became Assistant to the Freight Rolling Stock Controller, and fourteen years later Assistant Freight Rolling Stock Controller. On the outbreak of the recent war, Mr. Batty's experience was made available on several sub-committees of the R.E.C. Operating Committee. He was one of the original members of the sub-committee which planned a scheme for centralising the control of rolling stock for all the railways. When the Inter-Company Freight Rolling Stock Control was established in March, 1941, its activities were subject to the guidance of a Freight Rolling Stock Committee, in turn responsible to the R.E.C. Operating Committee. Mr. Batty was released by his company to act as Chairman of the Freight Rolling Stock Committee. A full record of the work accomplished is given in chapter 14 of the "History of the British Railways during the War, 1939-45," recently published.

Mr. Peter Richardson, M.B.E., Assistant District Goods Manager, Broad Street, L.M.S.R., who retired on September 30, had over 53 years' service, and was never absent through sickness. Mr. Richardson was educated at Stockport Higher Grade School, and won a Whitworth Scholarship to Stockport College. He joined the L.N.W.R. at Manchester in 1893, and, after holding various positions, became in 1930 Station Working Assistant to the District Goods Manager, Manchester. Within a year he went to London to take charge of the Centralised Accounts Office, and he took over the position of Assistant District Goods Manager, Broad Street, in 1941. Mr. Richardson was made an M.B.E. in 1918 for services in connection with the war when Agent at London Road, Manchester. During the recent war he was permanently connected with the arrangements for causing traffic to work smoothly after each of the 445 bomb incidents affecting the 116 depots in the L.M.S.R. London Goods District. He has

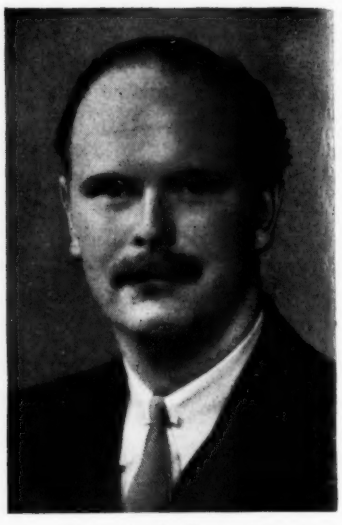
Mr. T. E. Batty

Chairman, Freight Rolling Stock Committee, 1941-46



Mr. P. Richardson

Assistant District Goods Manager, Broad Street, L.M.S.R., 1941-46



Mr. A. C. Bonnaffon

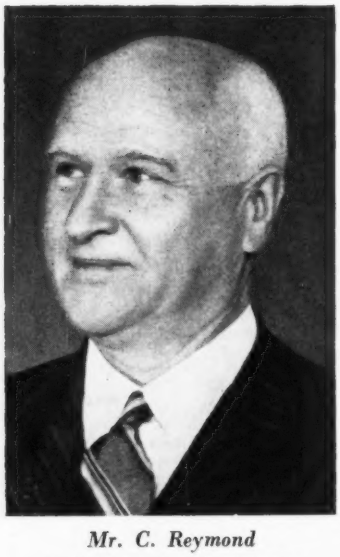
Appointed General European Agent, Pennsylvania Railroad

taken an active part in working out the plans for the reconstruction of the warehouses and sidings.

Mr. Ashton C. Bonnaffon, O.B.E., M.Inst.T., has been appointed General European Agent, Pennsylvania Railroad, with headquarters at 88, Leadenhall Street, London, E.C.3. He will co-ordinate and direct activities of Pennsylvania Railroad representatives in Europe, the Near East and Africa. Under his direction the staff is equipped to serve exporters, importers, travellers and shippers as to schedules, rates, customs duties and related matters, in co-operation with Thos. Cook & Son Ltd., the railway's general foreign passenger agent. Mr. Bonnaffon was born in California, and entered railway service in 1930. He was appointed a Freight Representative at New York in 1936, and later the same year was selected to represent the Pennsylvania Railroad in an interchange of staff with the London Midland & Scottish Railway. On his return to the U.S.A. he was appointed Foreign Freight Representative, and served in numerous cities. In 1942 Mr. Bonnaffon was commissioned as a Captain in the U.S. Army, and he served overseas in the Office of the Chief of Transportation, becoming a Lt.-Colonel. He received the Bronze Star from the U.S. Army, and was made an O.B.E., and an Officer of the Order of the Crown of Belgium.

Mr. C. Reymond, who, as recorded in our September 27 issue, has been appointed Secretary for Railways, Western Australia, was born in South Australia on October 14, 1885, and went to Western Australia in 1902, when he entered the railway service. After holding various positions he was appointed Transport Officer, District Superintendent's Office, Geraldton; and in 1908, with two other traffic officers, he was transferred to the Audit Branch. In 1923 he was promoted to be Finance & Freights & Fares Officer in the Secretary's Branch, and later to be Assistant Secretary. He has accompanied three successive Commissioners to annual Conferences of Australian Railways Commissioners for 22 years. In the initial stages of the special wartime work undertaken by the present Commissioner of Railways (Mr. J. A. Ellis), Mr. Reymond acted as Secretary of the new Department of Rolling Stock Construction, and attended all War Railway Committee meetings. He also was appointed Deputy-Director of Transportation in Western Australia for the Commonwealth Government. He assumed the office of Deputy-Secretary for Railways some five years ago.

Mr. P. C. Raynor, who, as recorded in our September 27 issue, has been appointed Personal Assistant to the Commissioner of Railways, Western Australia, was born on May 28, 1895, and joined

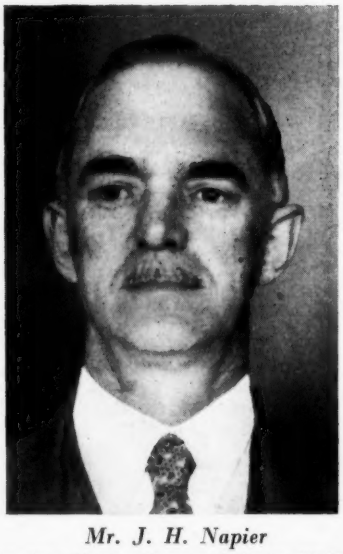


Mr. C. Reymond

Appointed Secretary for Railways, Western Australia

Mr. P. C. Raynor

Appointed Personal Assistant to Commissioner of Railways, Western Australia



Mr. J. H. Napier

Appointed Manager, Tramways & Ferries, Western Australian Government Railways

the Railway Department in the Audit Branch in 1911. He was transferred to the Branch of the Secretary for Railways in 1921, and has filled the senior positions in that branch of Officer-in-Charge, Commercial, Freights & Fares; Officer-in-Charge, Finance; and, from December, 1941, to July, 1946, Deputy Assistant Secretary for Railways, including a term of seven months as Deputy Secretary. Since 1942 he has been a member of the Western Australian Coal Committee. At present he is conducting the departmental case before the Royal Commission of Inquiry on Australian standard Garratt-type locomotives. Since the inception last year of the Railways Publicity Committee, Mr. Raynor has been a member, and, on Mr. J. F. Tomlinson's recent retirement, he succeeded him as Chairman.

Mr. J. H. Napier, O.B.E., E.D., who, as recorded in our September 27 issue, has been appointed Manager, Tramways & Ferries, Western Australian Government Railways, Tramways & Ferries, entered the railway service from the Perth Gas Company in 1910 as an apprentice fitter. After returning from war service in 1916, he completed his apprenticeship, and in 1917 transferred to the Government Electricity Supply as draughtsman, later becoming Chief Draughtsman. He was appointed Distribution Engineer in 1924. He was called up for full-time Army service in August, 1939, and resumed with the department in August, 1944, after having been in command of Engineer Works & Services, with the rank of Lt.-Colonel, in Western Australia and later in South Australia.

Viscount Portal and Mr. John Benstead are members of the new Colonial Economic & Development Council. Viscount Portal is Chairman of the Great Western Railway Company, and Mr. Benstead is General Secretary of the National Union of Railwaymen.

L.M.S.R. Staff Changes

Mr. S. Williams, Signalling Assistant to Signal & Telegraph Engineer, Watford H.Q., to be Divisional Signal & Telegraph Engineer, Manchester, in place of Mr. S. W. Spendlove, retired.

Mr. C. G. Derbyshire, Assistant (Development & New Works), Signal & Telegraph Engineer's Department, Watford H.Q., succeeding Mr. S. Williams as Signalling Assistant to Signal & Telegraph Engineer, Watford H.Q.

Mr. T. C. Byrom, Assistant to District Passenger Manager, Liverpool, to be District Passenger Manager, Liverpool, in place of Mr. H. E. Pedley, retired.

Mr. F. W. Moxon, Station Working Assistant, District Goods Manager's Office, Broad Street, to be Assistant District Goods Manager, Broad Street, in place of Mr. P. Richardson, retired.

Mr. T. Guest, Divisional Assistant (Signals), Signal & Telegraph Engineer's Department, Crewe, to be Assistant Divisional Signal & Telegraph Engineer, Crewe.

Mr. F. Joseph, District Road Motor Engineer, Blackburn, to be District Road Motor Engineer, London, in place of Mr. A. Brentnall, retired.

Mr. T. W. Braithwaite, District Foreman, Road Motor Engineer's Department, Birmingham (Saltley), succeeding Mr. F. Joseph as District Road Motor Engineer, Blackburn.

Mr. R. North, District Controller, Kirkby, to be Assistant District Operating Manager, Nottingham.

Staff & Labour Matters

Trade Union Membership, L.P.T.B.

An application by five employees of the London Passenger Transport Board for an interim injunction to restrain the Board from making it a condition of their employment that they, or any of them, should join the Transport & General Workers' Union, which was heard in the Vacation Court during September 18 and 19, was refused by Mr. Justice Wynn Parry.

In giving judgment, his Lordship said that before the passing of the London Passenger Transport Act, 1933, each of the plaintiffs had been employed by a company or firm carrying on the business of bus proprietors. By reason of the Act those undertakings had been transferred, together with all their rights and liabilities, so that as a result the plaintiffs had become employed by the Board. Section 73 of the Act applied to their cases, and sub-section (3) of that section provided that no existing officer or servant so transferred "shall, without his consent, be by reason of such transfer in any worse position in respect to the conditions of his service as a whole compared with the conditions of service formerly obtaining with respect to him."

It was said in each case that, before the plaintiff concerned had become the servant of the Board, the terms of his contract with his previous employer had provided, or a practice had been recognised by such employer, that the employee should not be required to join a union and that he should not be liable to be discharged except on the grounds of misconduct, age, ill-health, or reduction of staff. Mr. Gilbert Paull, K.C. (for the plaintiffs), contended that those terms had become terms of the plaintiffs' employment with the defendants. He reserved the point that, even if those terms were not actually terms of employment with the Board, the defendants had so acted as to make it inequitable that they should not be enforced.

With regard to the first point, he agreed with Mr. Paull's submission that the evidence made it clear that it had never formed any part of the plaintiffs' contracts with their previous employers or with the Board that they should be required to join a union.

That did not end the matter. It followed that if the defendants wished to insist that every employee should join a particular union they must first terminate the employment of those who were not willing to do so, and presumably find others to take their place. That was exactly what the defendants intended to do, as was made clear by the circular which they had issued on August 26, in which they stated that they had decided not to continue in their service any employee in the grades concerned who was unwilling to join the Transport & General Workers' Union. It was stated on behalf of the defendants that they would contend that such a policy was necessary in the interests of the general public, and that it did not involve a breach of any condition, express or implied, in any agreement with their employees.

It was not for him to consider in any way the ethics or morality of the defendants' policy, or how it came to be adopted. That was wholly irrelevant to the matters arising for consideration. The importance of the statement was that it made it clear to him that, whether rightly or wrongly, of which he said nothing, the defendants intended to bring those contracts to an end where the employee was not a member of the union, unless such employee was willing to agree to a variation of his contract.

The question then arose what should be done pending the trial of the action. Mr. Paull contended that what the defendants intended to do would involve a breach of contract. He (his Lordship) had not thought it desirable to go into that question, which would be the main question at the trial, and on the answer to it would depend whether or not the plaintiffs were entitled to damages. He proposed to assume in favour of the plaintiffs, without deciding the matter, that Mr. Paull was correct in his submission that there was a term in each contract that the employee should not be discharged except on grounds of misconduct, age, ill-health, reduction of staff, or on some similar ground.

Even on that assumption, would it be right to intervene and grant an injunction restraining the defendants from making it a condition of the plaintiffs' employment that they should join the union? There was a well established principle of that Court that it would not enforce specifically a contract for personal service.

In his view the remedy of the plaintiffs, if there were a breach of contract, was primarily in damages. Any injunction which that Court granted at the present time could at the most be only of a very limited nature as regarded the period during which it would be effective. He had come to the conclusion that the case was not one in which he should interfere at that stage by granting an interlocutory injunction. The motion would, therefore, be refused, with costs.

Increased Services by London Transport

From October 7 London Transport will introduce increased services on Underground lines and on bus, tram, trolleybus, and Green Line coach routes. Particulars of the improvements have been given by Mr. J. H. Brebner, Chief Public Relations & Publicity Officer, London Transport.

Mr. Brebner said that this winter 73,200 more car-miles would be run a week on the Underground railways than at the present time, and 130,000 more than last winter. On the District Line there would be three extra morning trains from Upminster to the City, and five from Dagenham. In the reverse direction there would be five new services from Aldgate East to Dagenham and four to Upminster.

Extra trains in the morning and evening peak hours would be provided on tube lines, and on the Central Line there would be improvements in the frequency of service during the mid-day slack period. On the Metropolitan Line there would be five more trains between Liverpool Street and Baker Street, four more between Baker Street and Harrow, and one more between Harrow and Watford.

Improvements in road services would cover 18 Central Buses routes, 22 Country Buses routes, and 7 tram or trolleybus routes. A new weekly ticket for users of Green Line coaches had been introduced on September 30, based on six return journeys at 1½ times the single fare, and was available to passengers making a minimum of five regular weekday return journeys. From the same date, cheap day return tickets had been issued on Green Line coaches for journeys to and from London outside the peak hours on Tuesdays, Wednesdays, and Thursdays, based on single fare plus a half.

Railway Charges Consultative Committee

Argument in opposition to proposed increases in rates

The Railway Charges Consultative Committee, consisting of Sir Bruce Thomas, K.C. (chairman), Mr. Herbert E. Parkes, and Mr. T. E. Argile, appointed by the Minister of Transport to advise him upon adjustment of railway rates, fares, and charges, resumed its inquiry in London on Tuesday, September 24. Cross-examination of the railway witnesses by legal representatives of some of the 43 trade organisations and public bodies interested in the proceedings was opened by Mr. H. V. Rabagliati, K.C., representing the National Coal Board and the Monmouthshire & South Wales Coalowners' Association.

Questioning Mr. C. R. Dashwood, Chief Accountant of the G.W.R., Mr. Rabagliati said: "You will appreciate, I am sure, that the National Coal Board is taking over the coal industry at a very critical moment, and that any addition upon the cost of it, such as must be made if additional railway rates are put on, would be of grave concern to it?"

Mr. Dashwood: "Certainly."

During subsequent detailed cross-examination on the statistical tables and accounts supplied by the railway companies, Mr. Rabagliati said: "What is the ultimate destination of the fund for contingent liabilities? Supposing the contingencies which are provided against never materialise, what would be the ultimate destination of that £30 millions?"

Mr. Dashwood: "I can't agree that such a possibility will arise. In my view the £30 millions is too low. To answer on an hypothesis, however, I should say that it would go back to the net revenue account of the last period of control." The fund was totalled from £3 millions in 1942, £2½ millions in 1943, £10 millions in 1944, and £14 millions in 1945, Mr. Dashwood added. No figure could be arrived at for 1946 until the end of the year.

Receipts Compared

Later in his cross-examination, Mr. Dashwood quoted the following comparison of receipts of the four main-line companies and the L.P.T.B.: January, 1945, £6,320,000; January, 1946, £6,068,000; February, 1945, £6,713,000; February, 1946, £6,215,000; March, 1945, £7,400,000; March, 1946, £6,347,000; April, 1945, £7,585,000; April, 1946, £6,770,000; May, 1945, £7,466,000, May, 1946, £6,680,000.

"Those figures include the L.P.T.B.," Mr. Dashwood said, "which is showing a regular increase of receipts. Stripped of L.P.T.B. receipts, the figures would show a still further decline in the case of the main-line railway companies. For the first 36 weeks of 1946, the total decrease in total traffic receipts amounted to £19,497,000. The decline for the four main-line companies for those 36 weeks was £24,076,000, a £4,579,000 increase coming from the L.P.T.B.

Later, Mr. Rabagliati told Mr. Dashwood: "It is my suggestion, and that of expert witnesses who may be called, that one expects greater traffic in the second half of the year than in the first half in normal times. Even if Government traffic is falling, and therefore will upset the normal course of events of this year, public traffic is increasing in both goods and passenger to a much greater extent than you and Mr. Pope have given credit for in arriving at your estimates for 1947. You haven't given sufficient credit, according to my witnesses, for the increase in public traffic that may be expected to arise in the second half of this year."

Mr. Dashwood replied: "We have put forward our case. We explained the basis on which our figures have been compiled, and I suggest it is up to the Committee to decide whose estimates are more reliable."

The Chairman intervened to say that the statistical suppositions which Mr. Rabagliati had been putting to Mr. Dashwood should have been worked out in advance "instead of occupying the time of the committee and the public attending in much arithmetic while the witness is in the box."

Mr. Rabagliati questioned Mr. Dashwood on the evidence which he gave about maintenance costs.

"You said that the cost of coal for the railways had increased to the tune of 139 per cent. since before the war. I would like to know how you arrive at that figure, because we have other estimates that have been made by railwaymen and the Minister of Transport, and they are a good deal lower than the figures you gave," Counsel said.

Mr. Dashwood replied that before the railways came under control, the companies bought their coal on more advantageous terms than the average consumer. Those arrangements were all cancelled by one of the Ministries.

Mr. Rabagliati: "You mean this is a temporary increase in cost by some Ministerial decision?"

Mr. Dashwood: "We have the facts and I can testify to a 139 per cent. increase over pre-war."

Mr. Rabagliati pointed out that the Minister of Transport had given the figure in the House of Commons as 97·9 per cent., the Chairman of the G.W.R. at the annual meeting in March had said 123 per cent., the Chairman of the Southern Railway had said 92 per cent., and the Chairman of the L.M.S.R. had not given a figure, but had said the cost had risen to 16 per cent. over 1944 and prices were now more than double the pre-war average.

Mr. Rabagliati added that his evidence would be that the increase over pre-war prices was 129·8 per cent., a difference of 10 per cent. with Mr. Dashwood's estimate.

Mr. Dashwood replied: "We are not imagining these things. We have the actual facts. I have no desire to inflate the cost of coal for these proceedings. The effective increase actually is much higher than 139 per cent. because of the poor quality of the coal we are getting."

Mr. Moelwyn Hughes, K.C., who appeared with Mr. Leon McLaren, representing the L.C.C., South West Essex Traffic Advisory Committee, North West Kent Traffic Advisory Committee, and the Orpington U.D.C., said he represented 7,000,000 people—about a sixth of the population of the country.

"I am approaching this from the point of view of people who have to travel on the railways. There is no justification for any increases whatever in the price of season tickets, workman's tickets, or ordinary passenger traffic. There may or may not be with regard to goods."

Mr. Hughes submitted to Mr. Dashwood a graph showing the rise and fall of passenger train receipts month by month for 1938, 1945, and the present year, and according to which the trend in receipts was identical for each year. But Mr. Dashwood could not agree that the trend of receipts for the remainder of 1947 could follow 1938 and 1945.

"We know better," Mr. Dashwood said.

Later Mr. Hughes asked: "Do you agree, generally, that passengers do contribute to the cost of carrying goods?"

Mr. Dashwood: "I wouldn't accept any proposition of that sort at all."

Mr. Hughes asked if Mr. Dashwood agreed that of the four main-line companies, the one which before the war was predominantly dependent on passenger receipts was the Southern Railway.

Mr. Dashwood replied that the Southern Railway passenger receipts were higher than the three other companies.

Mr. Hughes: "Would you also agree that in the period before the war the Southern Railway came nearer to meeting its standard revenue than any other company?"

Mr. Dashwood: "I believe that is true."

Mr. Hughes: "Is it fair to deduce from that, that the carrying of passengers is more profitable than goods?"

Mr. Dashwood: "You could make that deduction, but I should want to examine it much more closely."

The hearing adjourned until Wednesday, September 25, when Sir Valentine Holmes, K.C., representing the British Iron & Steel Federation, the National Council of Associated Iron Ore Producers, and the Council of Iron Producers, cross-examined Mr. Dashwood.

Sir Valentine told Mr. Dashwood: "When I address the Committee I will say something about the increase of rates on the industry I represent, but I don't think anything I say will be controversial as regards the railway companies. Would you agree with this, from your knowledge: that the item of railway transport in production costs is larger in the iron and steel industry than in any other industry?"

Mr. Dashwood: "I have heard it said, but it is a tall order if you say 'any other industry.' I have heard that there are six tons of materials which go to make up a ton of steel. That may or may not be right, but if it is true, you have got to pay six lots of transport for six kinds of material."

Iron and Steel Prices

Sir Valentine: "Would you agree that a rise in the price of iron and steel affects industry generally probably more than a rise in the price of any commodity that is carried by the railways except coal?"

Mr. Dashwood: "Whatever burden the increased charges places on iron and steel, it has to find its way sooner or later to the consumer. Somebody has got to pay the £21,182,000 estimated deficiency of net revenue, and we are not taking sides."

Sir Valentine: "In opening this inquiry, Mr. Lionel Heald, K.C. (leading counsel for the railways), spoke of the subsidisation of goods by passengers as a result of the differentials between the rates of the two, made in July of this year. He put the same thing in the form of a leading question to Mr. Pope, who, in his usual politeness, agreed with him. You have told the Committee that you cannot separate or work out the proportion of railway costs as attributable to goods and passenger traffic. It necessarily follows, therefore, that it is quite impossible to say, whatever the differentials may be,

whether the passengers are subsidising the goods or whether the goods are subsidising the passengers?"

Mr. Dashwood: "There is something in what you say. In my view the references to subsidising can be quite easily explained."

The alternatives, Mr. Dashwood explained, were to increase rates for either goods or passengers. If they took the first course they were asking passengers to relieve the burden otherwise placed on goods. In that sense it was subsidisation.

Sir Valentine: "You don't really call that subsidisation, do you?"

Mr. Dashwood: "I do, sir."

Mr. Geoffrey Hutchinson, K.C., for the Chamber of Shipping of the United Kingdom: "Last week you said that the average weighted increase of expenditure over pre-war was 75 per cent. As against that, the railway companies are recommending to the Committee an overall percentage increase of 37 per cent. At some stage I shall have questions to ask one of the witnesses which are intended to show the consequences to coastwise shipping.

Mr. Dashwood: "The way in which you framed your question appears to involve a little fallacy. There is no necessary or direct connection between 75 per cent. and 37 per cent. We could carry the 75 per cent. increase on our backs without any increase in rates if we had enough traffic."

Charges and Working Costs

Mr. Hutchinson: "I understood Mr. Pope to say that increases in your charges need not necessarily bear any relationship to the increases in your working costs. I am concerned with the consequences that may have upon coastwise shipping.

Mr. Dashwood: "I don't think this has any consequences."

Mr. Hutchinson: "In the case of coastwise shipping, the increases in working costs necessarily must bear a greater relation to the increases in charges than in the case of the railways."

Mr. Dashwood: "I don't see why."

Mr. J. P. Graham, representing Southend Corporation, Southend Railway Travellers' Association, and season-ticket-holders of Clacton, Frinton, and Walton, asked Mr. Dashwood: "Would you agree that the holder of a season ticket pays a lower rate because the transaction which he enters into is an ordinary commercial transaction which pays both him and the railway companies?"

Mr. Dashwood: "I don't see any harm in assenting to that."

Mr. Graham: "Any suggestion that season-ticket holders are receiving doubly favourable differentials is nonsense?"

Mr. Dashwood: "No, sir."

Mr. Jacques Abady, K.C., for the British Coking Industry Association, told Mr. Dashwood that he was concerned with the Committee's terms of reference from the Minister of Transport to "have regard to the Government's policy of full employment" in considering adjustments to fares, rates, and charges.

"I suggest that you can assume that there will be a high level, if not an especially full level, of employment in the country during the period in respect of which you have to make your estimates."

Mr. Dashwood replied: "I think it is for the Committee to decide that."

Mr. Lionel Heald, K.C.: It is not for the witness to construe the Committee's terms of reference."

Mr. Leon McLaren, appearing for the South West Essex Traffic Advisory Committee, was questioning Mr. Dashwood on salary increases for railway workers.

"I am told," he said, "that a guard who was earning £150 a year pre-war is now receiving increases of £97 10s. 0d. a year. That is published in *The Railway Gazette* for 1946."

Mr. McLaren mentioned other salaries which had risen from £150 to £232 per annum.

Mr. Dashwood: "I cannot recognise the figures."

Mr. McLaren: "They were published by *The Railway Gazette* for 1946."

Sir Bruce Thomas, K.C. (Chairman of the Committee): "But *The Railway Gazette* comes out every week."

After consultation with his advisers, Mr. McLaren said: "This information does not come from *The Railway Gazette*, but it has been drawn from 'A History of the British Railways During the War.'"

At the conclusion of Mr. Dashwood's cross-examination, Sir Bruce Thomas said that it has been the practice of the railway companies in the past to consult all interests concerned and he gathered this had been done in connection with the present inquiry on a much wider extent than previously.

Mr. Dashwood: "I do not know of any inquiry which has been conducted on such a wide extent as this one."

Mr. Pope Re-Examined

Returning to the witness box, Mr. F. A. Pope, a Vice-President of the L.M.S.R., produced a statement showing the effect of the application of latest available information on the estimated receipts for 1946 at present level of charges. The revised estimates increased the estimated total passenger train receipts by £1,405,000 from £161,035,000 to £162,440,000, but decreased total goods train receipts by £1,975,000, from £160,236,000 to £158,261,000. These revised estimates combined to decrease the total traffic receipts by £570,000 from £321,271,000 to £320,701,000.

These calculations were based on the following revisions: The revised estimate for public passenger receipts fell by £713,000 from £86,617,000 to £85,904,000, but Government passenger receipts were revised to increase from £34,300,000 to £35 millions.

There were no changes in the estimated receipts for season tickets and workmen's fares, mails, and parcels post. Estimated receipts from public parcels were revised to increase by £1,048,000 from £13,766,000 to £14,814,000, and Government parcels by £370,000 from £4,209,000 to £4,579,000.

For goods train receipts the revised estimate for public merchandise gave a £745,000 increase, but for Government merchandise a fall of £2,776,000. Coal, coke, and patent fuel receipts were unchanged, but livestock receipts were revised to increase by £56,000 from £1,288,000 to £1,344,000.

Reasonable Estimates

The revised 1946 estimates, however, had no effect on the estimates for 1947, Mr. Pope thought, and did not demand any alterations to the recommendations which the railways had put for increased fares, charges, and rates.

"Our 1947 estimate is a reasonable one," Mr. Pope said, "and there is nothing materially wrong in the way we have got it out."

On Thursday, Mr. Moelwyn Hughes, K.C., representing the L.C.C. and a number of boroughs and traffic advisory committees in the Home Counties, told Mr. Pope: "In 1947 the number of prospective travellers in khaki will have gone down and by that very same process the number of travellers in bowler hats will have gone up.

"We have heard in the course of these proceedings more than one reference to the experience and prophetic skill of railway executives. I am not going to dispute that railway executives have more information than anybody else and that in certain directions they have had to forecast various types of traffic. But this is quite an abnormal situation. I think it is right to say that you have never before had to forecast the results on all kinds of traffic of the main-line railways of the changeover from war to peace. I think I am right in saying that you have never before had to exercise your powers of forecast in a situation where you have got millions of men turning over from the armed forces into civilian life. I think this is the first time your forecast, for public consideration at any rate, has been based on a division of your traffic between Government and public traffic. I believe I am right in saying also that it is a novel situation for you to be asked to forecast your expected activity in an economy which is to be governed by the policy of full employment?"

Sir Bruce Thomas intervened to say that Mr. Pope had estimated his figures on the basis that everybody would be fully employed in 1947 and not on the basis of a very unsatisfactory state of affairs in the industrial world.

Government and Public Traffic

Mr. Hughes: "If the experience so far from the end of hostilities, from the beginning of demobilisation to the present time—a period of well over 15 months—indicates that the loss in Government traffic is made up by a gain in public traffic, why is it not right to assume that that experience will continue for the remainder of 1946?"

Mr. Pope: "We are talking about 1947 in making out our case. We can't tell what is going to happen in 1947 on your basis. It doesn't always follow that because there will be a drop in Government traffic there will be a rise in public traffic."

Mr. Hughes repeated his question three times. "Why, with the experience of the last 15 months, with all the fluctuating conditions and violent changes which have taken place, should not the Committee assume that that situation which has been maintained consistently for 15 months should not continue for the next three months?" he asked.

Mr. Pope: "I won't accept that. You are taking a very short term view, when anything may happen."

Mr. Hughes: "Very well; if you won't explain, you won't. If the trend of traffic for 1946 follows the trend of traffic for 1945, as it very nearly has, the receipts for the last 20 weeks, instead of the railway companies' own computation of £54,400,000, will be £62,400,000, showing that on that basis there would be an excess over the estimates of roughly £8 millions—that is, if 1946 follows 1945?"

Mr. Pope: "Yes."

Mr. Hughes: "Have you any evidence whatsoever to justify the figure of an additional loss to road traffic in 1947 of £6 millions-worth of passenger traffic?"

Mr. Pope: "It isn't a loss. It is traffic that will go by road."

Mr. Hughes: "Had you any evidence at all or was it one of those 'educated guesses'?"

Mr. Pope: "We know, from the fact that we have interests in a good many

road transport companies, what the likely services will be in 1947."

Mr. Hughes reminded Mr. Pope of his evidence that the railway companies had sought advice all over the country from firms and industrial undertakings, on which information they had based their estimates, and to which Mr. Hughes referred.

Mr. Hughes: "Will you tell the Committee the name of one single firm concerned, or the name of one responsible association, which has predicted for you productivity in 1947 which is less than 5 per cent. over 1946?"

Mr. Pope: "I am not going to disclose any facts with regard to any firms."

Mr. Hughes asked Mr. Pope for details of the value of traffic for which the railway companies received no return, with the issue of free and privileged tickets to the staff.

Mr. Pope had no figures available, but admitted that "it must be a fair amount."

Mr. Hughes asked whether the railway companies had invited the Postmaster General to contribute more towards the cost of mail and parcel post.

Mr. Pope replied that as recently as September 6 the Postmaster General had agreed to a revision of charges.

When dealing with season tickets, Mr. Hughes spoke of the conditions of overcrowding under which season-ticket-holders were travelling at the present time. He mentioned, as a specific example, the 6.1 p.m. train from London Bridge to Dartford *via* Bexley Heath.

"In one compartment, with accommodation for 10 people, there were 22 people on June 4. On June 5 there were 15 people and on June 6 26 people," Mr. Hughes said. "When do you hope to be able to do something about this overcrowding?"

Overcrowding

Mr. Pope: "The main cause of overcrowding is the shortage of coaching stock. We are about 2,500 coaches less on the L.M.S.R. alone than before the war. Other railways are in a similar condition."

The shortage of coaching stock, Mr. Pope explained, was caused through the number of coaches which had gone out of service owing to age and condition, losses through bombing, coaches which had been converted into ambulance and evacuation trains, and stock still in Germany and Italy.

"We have placed orders with every firm which can take the work, in addition to doing work in our own shops," Mr. Pope added.

The railway companies, he said, were taking a lot of notice of all the information they received about overcrowding and he knew that there was a lot of overcrowding around the Dartford Loop.

"I can assure you that nobody is as anxious as we are to get enough coaches to stop that," he added.

Mr. J. P. Graham suggested that, whereas the railway companies were recommending increases of 37 per cent. over pre-war, many salaries had not risen by such a high percentage as that.

Mr. Pope: "As I understand it, the general level of clerical wages has gone up a great deal higher than 37 per cent."

Mr. Graham: "Season tickets and workmen's fares are being asked to provide 34·2 per cent. of the total increases that are required for passenger traffic, whereas their estimated receipts are only 13·7 per cent. of the total passenger traffic. It is not altogether surprising in these circumstances that some of the season-ticket-holders consider they are getting a raw deal?"

Mr. Pope: "No, it is not surprising."

Mr. Jacques Abady, K.C., disputed Mr. Pope's "pessimistic estimates" for receipts from goods and merchandise traffic, and the inquiry adjourned.

On Friday, Mr. Jacques Abady, K.C., concluded his cross-examination of Mr. Pope. Mr. Abady asked: "Is there any relationship between railway expenditure and railway receipts?"

Mr. Pope: "In certain aspects, yes."

Mr. Abady: "Normally, if you budget for an increase in the receipts, in some items you would expect an increase in expenditure?"

Mr. Pope: "Yes."

Mr. Abady: "The fact is this, isn't it: that though you suggest that the revenue for 1946 at July 1, 1946, level of charges will be £321 million and the expenditure £273 millions, when you come to your estimate for 1947, for a reduced amount of receipts—£18 millions less than 1946—there is an increase in expenditure of £10 millions?"

Mr. Pope: "Yes, that seems correct."

Mr. Abady: "Would you say what justification there is for your estimated increase of expenditure when you have estimated for such a big reduction in receipts?"

Mr. Pope: "There are many reasons for that. On the passenger side, although we legislate for an increase in public passenger train traffic, we legislate for a large decrease in military traffic. In putting back the railways into the state we think they ought to be, we are showing a considerable increase in coaching train materials. The decrease is entirely due to that military traffic which was not conveyed altogether by ordinary train services, but in specials. Therefore, part of the increase in 1947 train mileage is putting back regular mileage on the timetable, and that in itself justifies additional expenditure."

Mr. Abady: "I suggest you have been unduly pessimistic in your estimates of expenditure, and as I have already suggested, you are unduly pessimistic about the decrease in your receipts."

Mr. Pope did not reply.

Sir Valentine Holmes, K.C.: "When you were making your estimates for receipts for the year 1946 you had only the first 24 weeks of the year to go on? The position was that in January, February, and March, receipts had been appallingly bad?"

Mr. Pope: "Yes."

Sir Valentine: "What ultimately we are going to suggest is that you have taken an extremely pessimistic view of the industrial situation in 1947, and that you have also failed to take into consideration that the end of 1945 and the beginning of 1946 was a trough out of which we were just coming. We had just finished war. Everything stopped, or very largely stopped, as regards industrial production. But now we are on a rising wave."

Mr. Pope did not reply.

Sir Valentine: "You have made many railways estimates in your time, Mr. Pope, but you will agree with me, I expect, that you have never had to make a railway estimate quite in circumstances that prevail today, and that this is the first time when, in making a railway estimate, there has ever been an attempt to distinguish between Government and passenger traffic?"

Mr. Pope: "Yes."

Sir Valentine: "Therefore, for you as for anybody who comes to give evidence on our side, that distinction is a completely new field?"

Mr. Pope: "Yes."

Sir Valentine: "You can't, of course, go round and ask everybody in the country how much traffic they are going to give to the railways during the year, but you can get certain information as regards certain industries. For coal, you have got your information from the Minister of Fuel & Power, so I am not going to ask you anything about that. As far as our class of goods is concerned, you have asked my clients, who provide a very large proportion of those goods carried by the railways, for figures, and they have given you some. May I take it that apart from the National Coal Board, the Minister of Fuel & Power, and my clients, you haven't had information from any other federation of traders?"

Mr. Pope: "My answer is no."

Trend of Future Traffic

Mr. Pope mentioned that the railway companies had approached the I.C.I. and the National Farmers' Union, and explained that railway officials in touch with different industries were able to learn from them their trend of future traffic.

Sir Valentine: "Don't think I am being critical, Mr. Pope. I am not. I am just trying to find out where you get your information from. You have told us the I.C.I., together with other large industrial concerns . . ."

Mr. Pope: "Very many other large industrial concerns."

Sir Valentine: "Can you name them? Could you give a list of them? The results of your system are so strikingly at variation with what our witnesses consider the facts showing the trend in the economic situation of the country that I am trying to find out as far as possible where you got your facts from."

Mr. Pope replied that he had not the information with him, but it could be obtained and given.

Sir Valentine asked Mr. Pope whether he had considered what the trend would be in imports during the next year, most of which would be carried by the railways. Exports were vitally connected with imports, Sir Valentine said, and he pointed out to Mr. Pope that the Government, with its policy of full employment, was aiming at a 75 per cent. increase in exports in 1947 over 1938, that to-day we had practically reached the 1938 figure, and that the Board of Trade expected to reach the target in 1947.

"If that target is reached in 1947, it wouldn't be unreasonable, would it, to put the volume of exports over the year, in money, at 50 per cent. above 1938?" Sir Valentine asked.

Mr. Pope: "Money is not in direct relation with transport."

Sir Valentine continued that the Government's policy was to keep imports down to a minimum until the country could pay its way by exports, and if the target of 75 per cent. increase in exports over pre-war was reached in 1947, it reasonably followed that the volume of imports would increase very largely in 1947, Sir Valentine argued.

Mr. Pope agreed.

Sir Valentine: "I am sure you are not swayed by political considerations in your estimates and are working on the Government's policy and on the assumption that it will succeed. My experts will later quantify the extent of the estimates of the volume of import and export trade."

Sir Valentine questioned Mr. Pope on

the railway companies' estimated loss of traffic to road transport competition.

"For 1946 we worked on a basis of the actual receipts for the first 24 weeks of the year and projected them up to the end of the year, and that came to a figure of £2¼ millions for traffic attracted from the railways by increased road transport—for traffic which would otherwise have been carried by the railways," Mr. Pope explained.

"But the 1947 loss was more difficult to assess. Although we knew that there would be an increase in the civilian population in 1947 due to demobilisation, and that, therefore, on the face of it, revenue ought to rise in proportion to that increase, there are two factors to offset against that. First, the possible increase in the number of cheap fares, and, secondly, road transport competition. We took it, rightly or wrongly, that one factor offset the other."

Sir Valentine: "Surely that isn't a very satisfactory way of estimating, is it? Do you really mean you haven't any idea of what you ought to take off for losses to road transport in 1947?"

Mr. Pope: "With road transport you can't tell."

Sir Valentine: "I fail to understand why the introduction of cheap fares in 1947 should be a cause of deducting something from the receipts in that year."

Mr. Pope: "There may be reasons why the Minister of Transport decided there shall be increases in the number of cheap fares."

Sir Valentine: "Then I suppose I may take it that in the whole of your tables of estimated receipts for 1947, when you come to the passenger traffic revenue, you have assumed that cheap fares are going to reduce revenue rather than increase it?"

Mr. Pope: "Up to a point, yes."

Sir Valentine: "I don't know what you mean by 'up to a point.' Either cheap fares do increase revenue or they don't. You must assume one thing or the other."

Mr. T. E. Argile (a member of the Committee): "In some cases cheap fares are brought into operation to attract traffic and in other cases to maintain existing traffic."

Sir Bruce Thomas, K.C., Chairman of the Committee:: "In all cases, I presume, cheap fares are brought into operation in order that the railway companies may be better off after they have been brought into operation than before."

Sir Valentine: "The increases in expenditure are due, at any rate in part, to the increased travelling facilities for passengers?"

Mr. Pope: "Yes."

Sir Valentine: "Have you made any allowance for the fact that people will travel more if they are less uncomfortable than they have been in the last few years?"

Mr. Pope replied that the estimates had showed an expected rise in the travelling per head of the population in 1947.

Sir Valentine: "That is not an answer to my question. How many people do you think have avoided railway travelling in the last few years because they knew they would have to stand on one leg in the corridor?"

Mr. Pope: "I should say a very small number."

Sir Valentine: "How many people do you think kept away from railway travel because they saw advertisements all over the place asking 'Is Your Journey Really Necessary?'"

Mr. Pope: "Our experience is that they didn't take the slightest notice of that."

Sir Valentine: "What about the fact that holidays with pay will be much more general next year? Have you taken that into consideration?"

Mr. Pope: "Yes."

Sir Valentine: "Then where, and in what figures, have you reflected that increase in travel? I can't see it anywhere in your tables."

Mr. Pope replied that the increase did not materially affect the estimates for 1947 passenger traffic.

The inquiry adjourned until Monday.

Progress in Machine Tool Design

At the joint conference on Industrial Design which was held in London last week by the Council of Industrial Design and the Federation of British Industries, Mr. T. P. N. Burness, Managing Director of William Asquith Limited, read a paper on the design of machinery, with special reference to machine tool design.

Broadly speaking, said Mr. Burness, a machine tool might be described as a power-driven apparatus equipped with suitable cutting tools for shaping or fashioning metal parts to predetermined shapes and sizes.

As labour and material costs continued to rise, the adoption of the most effective methods of production was essential, and whatever disagreements there might be between management and labour as to how the fruits of industry were to be divided, there should be no difference of opinion regarding the methods which would create the greatest amount of real wealth with the least effort.

Ever since the machine tool came into use, there had been a continuous struggle between the machine tool maker and the producer of cutting tools, with the result that the design of machine tools could not be allowed to stay put for any time.

The early machine tools were crude combinations of castings mounted with a series of pulleys and belts, gears, handwheels, levers, and the like, and while they performed their job in a more or less satisfacfory way, they could hardly be described as artistic.

With the advent of electricity, however, the exterior shape of machine tools underwent a radical alteration. Electric motors could be built in, which meant the disappearance of pulleys and belting as well as overhead shafting, and electrical push-button controls centralised the operational radius of the machine. As speeds increased, it became necessary to enclose gears to ensure adequate lubrication, as well as from a safety point of view.

Range of speed had increased tremendously due to the increase in utilisation of light metals such as aluminium and magnesium alloys. The use of tungsten carbide tools for cutting iron and steel had called for higher cutting speeds, and, finally, a further recent development was the negative rake machining which had created wide interest. This increase in speed meant more power and greater mechanical efficiency; in other words, only the best materials would stand up to this increased wear and tear.

A much greater range of feeds was required in modern machine tool practice to cover the wider operating conditions. Rapid traverse in all directions was now part and parcel of modern design, so that there was a considerable saving in time by bringing the tool and workpiece together at a higher rate of speed just previous to the actual starting of the cut. This also eliminated unnecessary fatigue on the part of the operator, and meant that the operational time was reduced.

Centralised control should be a feature of modern design so that the maximum productive powers of the machine could be exercised by a minimum effort. All operating levers, handwheels, and electrical push-button controls should be within easy reach; and should be easy of operation, and, of course, equipped with the usual safety devices.

It was becoming increasingly common practice to have more or less general-purpose machines capable of ready adaptation to other classes of work. The tendency was to use multiple tooling to reduce productive times on the machine, and this problem had to be catered for by increased rigidity in the general design.

In many cases there had been little thought given by designers to machine maintenance. New designs should incorporate everything in the way of ready accessibility to parts likely to require attention from time to time.

It was not sufficient nowadays, concluded Mr. Burness, to design a machine which would merely do a particular job. Attention must be paid to the sales appeal side of the picture and he would particularly stress the desirability of seeing that the exterior form possessed that indefinable thoroughbred appearance associated only with the best.

British Steel Founders' Association Convention

The first technical convention of the British Steel Founders' Association, which is being held at the Royal Victoria Hotel, Sheffield, from October 3-5, began with a dinner at which the principal guests were:—

The Lord Mayor of Sheffield (Alderman C. W. Gascoigne, J.P.); The Master Cutler (Mr. Eric S. Osborn); Sir Charles Goodeve, F.R.S. (Director, B.I.S.R.A.); Messrs. W. Leonard (Parliamentary Secretary to the Ministry of Supply); D. Howard Wood (President, Institute of British Foundrymen); J. G. Pearce (Director, B.C.I.R.A.); Vincent Delport (Manager, *The American Foundry*).

On October 4 a series of works visits during the day is being followed by the first session at 8.15 p.m., when there is to be a round table discussion on "Sand Practice current in the Lancashire and Yorkshire region." On the last day, the second session is opening at 9.30 a.m. with a round table discussion on the "Relationship between Temperature and Fluidity in Converter and Electric Steels." At 11 a.m. the third session opens with an address by Mr. Basil Gray, Chairman of the B.S.F.A. Main Technical Committee, on the activities of the Committee.

DAY TICKETS FROM LONDON BY L.M.S.R.—Third class cheap day tickets from London termini to 33 outer suburban and country stations in the Home Counties were restored by the L.M.S.R. on October 1. These tickets are available by any train from Euston, Broad Street, St. Pancras or Fenchurch Street on Tuesdays, Wednesdays, and Thursdays, with the exception that they cannot be used for outward travel between 4.30 p.m. and 6.30 p.m. The furthest stations served by this facility are Tring, Luton, Tilbury, and Upminster.

Notes and News

Senior Draughtsman Required.—Charles Roberts & Co. Ltd., of Horbury Junction, near Wakefield, have a vacancy for a senior draughtsman. See Official Notices on page 399.

"Britain Can Make It" Exhibition.—The Council of Industrial Design has announced that, on account of the great public interest, the "Britain Can Make It" Exhibition will remain open until the end of November.

L.M.S.R. Bridge Contract.—A contract for the reconstruction of the bridge which carries Etruria Road over the L.M.S.R.'s Etruria-Kidsgrove Loop Line at Hanley Station (Staffs.) has been placed by the L.M.S.R. with a Mansfield (Notts.) firm.

Colonial Government Appointments.—Workshops progress officers, between 32 and 35 years of age, are required by the Nigerian Government Railway for one tour of 18 to 24 months with prospect of permanency. See Official Notices on page 399.

Agreed Charges.—Applications for the approval of 156 further agreed charges under the provisions of Section 37 of the Road & Rail Traffic Act, 1933, have been lodged with the Railway Rates Tribunal. Notices of objection must be filed on or before October 15 next.

Superintendent of Works Required.—A superintendent of works is required, age 25-35 years, by the Sudan Railways for service in the Sudan to supervise the construction and maintenance of harbour works and the preparation of estimates and similar work. See Official Notices on page 399.

Senior Civil Engineering Draughtsman Required.—A senior civil engineering draughtsman is required by the Iraqi State Railways for three years in the first instance. Candidates must have had considerable experience in a large civil engineering drawing office and possess a sound knowledge of building construction, including the design of steel bridges and structures. See Official Notices on page 399.

Locomotive Inspectors Required.—Three locomotive inspectors, age 30-40, are required by the Sudan Railways for service in the Sudan. Applicants should have had experience in locomotive running shed from cleaning to the rank of spare driver and be fully conversant with railways operating safety rules and regulations. For full details of these appointments see Official Notices on page 399.

L.M.S.R. Locomotive Named "City of Stoke-on-Trent."—At Stoke-on-Trent Station on September 20, the new L.M.S.R. class "7P" 4-6-2 locomotive No. 6254 was named *City of Stoke-on-Trent* by the Lord Mayor (Councillor Percy Williams, J.P.). Sir Francis Joseph, a Director of the L.M.S.R., presided, and was supported by Mr. T. W. Royle (Vice-President), Mr. H. G. Ivatt (Chief Mechanical Engineer) and other officers of the company. Guests included representatives of the civic and industrial life of Stoke-on-Trent.

Re-Opening of Mont Cenis Tunnel.—Regular train services through the Mont Cenis tunnel, between Modane, on the French side, and Bardonecchia, on the Italian side, were resumed on September 1, after a break of about two years. There are no through services between France and Italy yet, passengers changing trains at Modane, but through trains will be instituted when the winter timetable comes into operation on October 7, when through trains from Paris to Rome *via* Modane, and between Lyons and Turin *via* Modane, will be restored. Passport and luggage inspections take place at present at both Modane and Bardonecchia. They are, however, to be centralised at Modane as from October 7, as they were before the war.

Repairs at L.M.S.R. Motive Power Depots.—The L.M.S.R. has placed contracts with a Normanton (Yorks.) firm for repairs to the roofs, smoke troughs and uptakes at Normanton Motive Power Depot, and with a Richmond (Surrey) firm for repairs to the inspection pits and pavings at Sutton Oak engine shed, near St. Helens.

Aluminium Hopper Wagons on the Missouri Pacific Railroad.—We regret that the illustrations which accompanied the article appearing on page 123 of our issue of August 2, 1946, related to steel hopper wagons constructed by the American Car & Foundry Company for the Texas Pacific Railroad, and not to the aluminium hopper wagons described in the article

Barsi Light Railway Dividend.—The directors of Barsi Light Railway Co. Ltd. have declared a second interim dividend on the ordinary stock in respect of the half year to March 31, 1946, of 3½ per cent. actual, payable on October 31, less tax at 9s. in the £. No final dividend will be recommended at the annual general meeting to be held later. The total payment for the year to March 31 last will thus be 6½ per cent.

Visco Engineering Co. Ltd. Jubilee.—The Visco Engineering Co. Ltd., Stafford Road, Croydon, celebrated its silver jubilee last month with a dinner held on September 27, to which all employees were invited. Those present included Mr. F. Curt Smith, the present Managing Director, who founded the firm in 1921, with offices in Victoria Street, to market the "Visco" Air Filter—the first British all-metal air filter using oil-film covered surfaces as the filtering medium.

L.N.E.R. Extends Seat Reservations.—From Monday, October 7, seats may be reserved on the following L.N.E.R. expresses on weekdays:—

10 a.m.	"Flying Scotsman," Kings Cross to Edinburgh and Aberdeen
10 a.m.	"Flying Scotsman," Edinburgh to Kings Cross and on the through portion from Aberdeen
1 p.m.	Kings Cross to Edinburgh
1.10 p.m.	Edinburgh to Kings Cross
3.30 p.m.	Kings Cross to Newcastle
10 a.m.	Newcastle to Kings Cross
8.45 a.m.	Darlington to Kings Cross and on the through portion attached at York
3.40 p.m.	Liverpool Street to Norwich

On Sundays seats may be reserved on the 11 a.m. from Kings Cross to Edinburgh and 11.15 a.m. from Edinburgh to Kings Cross. As announced in our September 20 issue, seats may be reserved on the "East Anglian" as from the same date, and on the "Yorkshire Pullman" as from November 4.

G.W.R. London Division Winter Services.—Several new services in the Oxford, Banbury, and Princes Risborough districts are among the improvements which will take effect in the winter timetables from October 7. Additional trains will run at 7.55 a.m. and 1.58 p.m. from Princes Risborough to Banbury; at 8.10 p.m. from Princes Risborough to Thame; and at 9 p.m. from Princes Risborough to Aylesbury. There will be two new trains from Oxford to Kingham, a new train from Oxford to Didcot at 9.45 a.m., and the present 10 a.m. slow from Oxford to Didcot will be a fast train to Paddington, calling at Didcot only. Other improvements will be made in the Reading, Maidenhead, and Newbury areas, including a new fast train from Reading to Newbury at 11.50 a.m., continuing to Trowbridge calling at principal stations. There will be new trains from Didcot to Eastleigh at 10.50 a.m., and from Southampton to Newbury at 9.36 a.m.

Hadfields Limited London Offices.—Hadfields Limited announces that its London offices at Norfolk House, Laurence Pount-

British and Irish Railway Stocks and Shares

Stocks	Highest 1945	Lowest 1945	Prices Oct. 1, 1946	Prices Rise/Fall
G.W.R.				
Cons. Ord. ...	60⅜	47½	56½	+ ¼
5% Con. Pref.	124½	104½	111¾	—
5% Red. Pref. (1950)	107¾	101½	104½	—
5% Rt. Charge	137¾	120	127½	—
5% Cons. Guar.	135½	117	123½	+ 1
4% Deb. ...	118	106	114	+ 1⅛
4½% Deb. ...	119½	108	116½	—
4½% Deb. ...	124½	111½	123	+ 1
5% Deb. ...	138	124	133½	—
2½% Deb. ...	83	74½	89½	—
L.M.S.R.				
Ord.	33	23½	28	—
4% Pref. (1923)	65	50	54½	+ 1
4% Pref. ...	80¾	69¾	77½	+ 1½
5% Red. Pref. (1955)	106½	99½	102½	—
4% Guar. ...	106½	97	102½	+ 1
4% Deb. ...	110½	102	108½	+ ½
5% Red. Deb. (1952)	110½	103½	107½	+ 1
L.N.E.R.				
5% Pref. Ord.	8½	5½	5⅞	—
Def. Ord. ...	4½	2⅜	2⅜	—
4% First Pref.	62½	49½	53½	+ 1½
4% Second Pref.	33½	24½	27½	+ ½
5% Red. Pref. (1955)	103	96	99	—
4% First Guar.	104½	95	100½	+ 1
4% Second Guar.	97	89½	95	+ ½
3% Deb. ...	91⅛	82½	95	+ ½
4% Deb. ...	109½	101	108	+ ½
5% Red. Deb. (1947)	103½	100	99	—
4½% Sinking Fund Red. Deb. ...	106⅜	103	105½	—
SOUTHERN				
Pref. Ord. ...	79½	63	71	—
Def. Ord. ...	27	20½	21	+ ¼
5% Pref. ...	124½	104	110	+ ½
5% Red. Pref. (1964)	117	107	109½	—
5% Guar. Pref.	135½	117	122½	—
5% Red. Guar. Pref. (1957)	117	106½	111½	—
4% Deb. ...	117	104½	113½	+ 1
5% Deb. ...	137	124	132½	—
4% Red. Deb. (1962-67) ...	112	104½	109½	—
4% Red. Deb. (1970-80) ...	113¼	104	109½	—
FORTH BRIDGE				
4% Deb. ...	106	103	106	—
4% Guar. ...	106	101	103	—
L.P.T.B.				
4½ "A" ...	125	117	125½	—
5% "A" ...	135	127	135½	—
3% Guar. (1967-72)	100	97½	105	—
5% "B" ...	125½	115	121½	+ 1
"C" ...	70	58	59½	— 1
MERSEY				
O.d.	37	31½	30	—
3% Perp. Pref.	72½	68¾	74	+ 1
4% Perp. Deb.	104¾	104	106	+ 1
3% Perp. Deb.	84	78½	85	+ 2½
IRELAND*				
BELFAST & C.D.				
Ord.	8⅛	6	7½	—
G. NORTHERN				
Ord.	34	24½	38½	— ⅜
Pref.	52½	42¾	58	— 1
Guar.	80	68	92	—
Deb.	97½	87½	105	—
IRISH TRANSPORT				
Common	—	—	18/6	— 3
3% Deb.	—	—	102½	— ¼

* Latest available quotation

OFFICIAL NOTICES

Crown Agents for the Colonies

COLONIAL GOVERNMENT APPOINTMENTS

APPLICATIONS from qualified candidates are invited for the following posts:—

WORKSHOPS PROGRESS OFFICERS

required by the Nigerian Government Railway for one tour of 18 to 24 months with prospect of permanency. Salary £630 rising to £720 a year, plus a local allowance of £24 a year and, for married men, a separation allowance of between £60 and £180 a year according to number of dependants. Free passages and quarters. Candidates, preferably between 32 and 35 years of age, must possess either of the following qualifications:—

(*a*) Must have served an apprenticeship as a Locomotive Fitter and Erector and subsequently have served continuously in the Fitting and Erecting Shop of a British Railway, with experience as a Progress Inspector. Must be fully qualified in the inspection of locomotive details after stripping and be capable of preparing stripping reports and giving instructions regarding details to be repaired or renewed.

(*b*) Must have served an apprenticeship in the Machine Shop of a British Railway or reputable engineering firm, and subsequently have had good experience of mass production methods and progress planning. A full knowledge of jig and tool fixtures and of the speeds and feeds of machine tools is essential.

Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience to the Crown Agents for the Colonies, 4, Millbank, London, S.W.1, quoting for (*a*) M/N/16857, for (*b*) M/N/16858 on both letter and envelope.

SENIOR CIVIL ENGINEERING DRAUGHTSMAN required by the Iraqi State Railways for 3 years in the first instance. Salary: I.D.60 a month, plus high cost of living allowance of between I.D.14 and I.D.18 a month according to number of dependants. Free passages. Provident Fund. Candidates must have had considerable experience in a large civil engineering drawing office and possess a sound knowledge of building construction including the design of steel bridges and structures. A knowledge of railway permanent way layouts an advantage. Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience, to the Crown Agents for the Colonies, 4, Millbank, London, S.W.1, quoting M/N/12653, on both letter and envelope.

Sudan Government

SUDAN RAILWAYS require THREE LOCOMOTIVE INSPECTORS, age 30-40, for service in the Sudan. Applicants should have had experience in Locomotive Running Shed from cleaning to the rank of spare driver, fully conversant with Railways Operating Safety Rules and Regulations; a thorough mechanical knowledge of the working of a locomotive including dealing with failures on the road. Experience in teaching in enginemen's improvement classes especially desirable. Experience with oil-burning locomotive an added qualification.

The salary scale of post applicable is £E.360—396—432—480—540—600 (biennial increases) —660 (triennial increase) if efficiency bar not passed after reaching £E.480. If efficiency bar passed, scale extended after £E.600 by two biennial and one triennial increments of £E.60 to £E.780 maximum.

Appointment on probation for permanent pensionable service, or Provident Fund Contract (with security for seven years after satisfactory completion of probationary period of two years), or on Short Term Contract (initially for two years) without post-service benefits. In the latter two cases the above pensionable rates would be increased by 15 to 25 per cent. Starting rate would be determined according to age, experience and qualifications. Cost-of-living allowance at the rate of 35 per cent. of salary, subject to a maximum of £E.15 per month, is now payable. Outfit allowance at the rate of £E.40 is payable when contract is signed, provided appointment is at a salary not exceeding £E.600 on Probationary Contract, £E.700 on Provident Fund Contract, or £E.800 on Short Term Contract. (£E.1 = £1 0s. 6d.) At present there is no Income Tax in the Sudan. Free passage on appointment. Strict medical examination.

Papers containing fuller information for candidates and application forms, are obtainable from the Sudan Agent in London, Wellington House, Buckingham Gate, London, S.W.1. Please mark envelopes "Loco. Inspector."

CHARLES ROBERTS & CO. LTD., Horbury Junction, Nr. Wakefield, have vacancy for SENIOR DRAUGHTSMAN with experience in either Railway Rolling Stock or Structural Steelwork. House available.

STATION DESIGN. A striking example of modern British practice at the important wayside station of Luton. Reprinted from *The Railway Gazette*. July 7, 1944. *Price* 1s. *Post free* 1s. 2d.

Sudan Government

SUDAN RAILWAYS require a Superintendent of Works, age 25-35 years, for service in the Sudan to supervise the construction and maintenance of harbour works and buildings, preparation of estimates and similar work. Inspectional diving to a depth of 40 ft. in tideless water from time to time. Applicants must have had good training and experience in harbour construction and/or maintenance work or in heavy civil engineering construction work; they must have had diving experience or, failing that, be willing to dive.

The salary scale of post is £E.300—324—360—396—432—480—540—600 (all biennial increases —660 maximum (triennial increases), if efficiency bar not passed after reaching £E.480. If efficiency bar passed, scale extended after £E.600 by two biennial and one triennial increases of £E.60 to £E.780 maximum. There is no Income Tax payable at present in Sudan. Free passage on appointment and strict medical examination. (Note: £E.1 = £1 0s. 6d.)

Appointment on probation for permanent pensionable service at a starting salary according to age, experience and qualifications. Outfit Allowance at the rate of £E.40 is payable on appointment provided starting salary is not less than £E.600 per annum. Cost-of-living allowance at the rate of 35 per cent. of salary, subject to a maximum of £E.15 per month is now payable. Papers containing fuller information to candidates are obtainable from the Sudan Agent in London, Wellington House, Buckingham Gate, London, S.W.1. Mark envelopes "Superintendent of Works."

THE Hunslet Engine Co. Ltd., Leeds, are urgently requiring the services of Senior Draughtsmen. Men with Locomotive experience preferred but not essential provided applicants can satisfy requirements. Prospects of continuous work with good working conditions and canteen facilities.—Apply, 125, Jack Lane, Leeds 10.

For Sale

"CHURCHILL" Motor-driven Double-ended Railway Axle Journal Grinding Machine, admit 8 ft. 4 in. between centres, swing 68 in. dia., 15 h.p. motors, 400 volt, 3-phase, 50 cycles.

Over 500 Good Used Machine Tools in stocks at Widdowson's, Canal Street Works, Nottingham. (Phin.: 42061.)

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ney Hill, and 7, Warwick House Street, Cockspur Street, have been transferred to 22, Carlton House Terrace, S.W.1, formerly the London residence of the late Sir Robert Hadfield, Bt. The telephone number is Whitehall 7107, and the telegraphic address, Hadfielder, London.

Cost-of-Living Index.—At August 31 the official cost-of-living index figure was 103 points above the level of July, 1914, compared with 105 points at August 1. At September 1, 1939, the cost-of-living index was 55 points above July, 1914.

Silentbloc Limited.—Silentbloc Limited, of Victoria Gardens, Notting Hill Gate, London, W.11, well known for its rubber bushes, anti-vibration mountings and similar fittings, has decided to work a five-day week. Basic rates have been guaranteed to all workers.

Romney, Hythe & Dymchurch Railway Developments.—Since the reopening of the line last March 271,094 passengers have been carried and the seven locomotives in service now have covered more than 48,650 miles. The line is open at present only to Maddisons Holiday Camp, 2½ miles beyond New Romney, 10½ miles from Hythe. Next year it will be reopened throughout to Dungeness, 14 miles, and a streamline train, with the world's smallest buffet car, will likewise be inaugurated.

Dorada Railway Co. Ltd.—The report of the Dorada Railway Co. Ltd. for the year ended December 31, 1945, shows gross revenue of £359,374, compared with £324,825 in 1944. Working expenses increased from £183,917 to £224,721, on account of higher wages and new social legislation, the net result being a decrease of £6,255 in the working profit. Passenger receipts improved by £9,021 on account of an increase in fares and in the mileage travelled per passenger. Paying goods tonnage fell by 4,523 tons, but receipts from this service were £24,917 higher, increased rates having been in force during most of the year to offset higher wages and material costs. The directors recommend a dividend of 4 per cent., free of income tax, and an addition to general reserve of £25,000, leaving £13,020 to be carried forward.

London Transport Escalator Cleaner.—A water fog apparatus, similar to that used on ships during the war, is to be employed on London Transport escalators to ease the work of cleaning the intricate mechanism beneath the moving stairs. One escalator at Knightsbridge and another at Charing Cross have been so fitted for some months as an experiment. Now the experiment is to be extended to another nineteen escalators. To prevent dust which accumulates in corners of escalators becoming ignited by a carelessly dropped match or cigarette end, it must be removed at regular intervals, and to this end the escalators are to be fitted with spray nozzles beneath the stairs throughout their length. Fed from water mains the nozzles produce a fine atomised spray all over the underside of the escalator, moistening thoroughly and dislodging any dirt.

Proposed Railway for Saudi Arabia.—Reuter reports from Washington that King Ibn Saud of Arabia has approached an American firm with a proposal to build a $50,000,000 railway across the Saudi Arabian desert. The railway is planned between the oil-producing area of Riyadh in the centre of Saudi Arabia, and Ras Tannura on the Persian Gulf, near Bahrein Island. The American firm, it is further learned, regards the scheme as uneconomic and impracticable because traffic would only be carried one way, and because of the difficulties of feeding and watering workers constructing the railway across miles of waterless desert. The firm has offered, instead, to construct at the same cost a network of roads throughout Saudi Arabia. King Ibn Saud, however, is said still to favour the railway, and his representatives in the United States are continuing to seek support for the plan, which would involve several times the $70 million loan recently granted to Saudi Arabia by the Export Import Bank.

Leopoldina Wage Agreement.—Advice has been received from Brazil of the signature of a formal agreement terminating the wages dispute that has been in existence for some months past on the Leopoldina Railway. As a result of this agreement, rates of pay are to be increased and conditions of service generally will be improved. To assist the company in meeting the cost thereof, certain tariff increases have been authorised and the company is to enjoy exemption from Customs duties on fuel, oil, and accessories for the building of rolling stock. As reported in our August 23 issue, the Leopoldina Railway was placed under Government management on May 19 after a strike which broke out at Alto da Serra had spread to other parts of the system. A previous conciliation proposal by a Government Arbitration Board had not been accepted by the company on the grounds that its resources already were overtaxed, and in consequence a Government Commission was set up to examine the company's accounts and give a final report.

Railway Stock Market

Although in some sections steadier conditions prevailed, stock markets have shown an uncertain trend. Buying interest was again restricted because of international and Wall Street uncertainties, which continued to influence sentiment, and selling, although generally moderate, tended to have a disproportionate influence on values. Colliery shares again moved higher on break up value estimates, but iron and steels recorded small indefinite movements. Among leading industrials, Imperial Chemical were firm at 41s. 10½d.xd., the unchanged interim payment tending to draw attention to the favourable yield on the basis of the 8 per cent. total dividends of recent years.

Argentine rails showed a diminution of activity and lost ground, although declines in debentures and various of the preference stocks were small when compared with the extent of the gains since the news of the Anglo-Argentine agreement. Ordinary stocks, although higher on balance, have fluctuated and tended to attract profit-taking on any rally. It is realised that particularly in the case of the ordinary stocks, and to a lesser extent the preference stocks, some while may have to elapse before the position can be assessed on a satisfactory basis. Meanwhile, the tendency is to await the decision, expected later in the month, as to the amount of the capital of the new Argentine company which is to take over the railway assets. In particular there are conflicting opinions as to the manner in which arrears of interest on debentures and other stocks will be dealt with.

Home rails again attracted more attention on wider recognition of the possibility that eventually, current levels of junior stocks, and preference stocks now quoted under par, may prove considerable undervaluations. Movements on balance have been small, but buying interest in home rails was more sustained.

It is generally recognised that the existing control agreement and fixed rental will remain in force until the future of the railways has been finally decided, which implies the maintenance of dividends at around last year's levels. Yields on this basis are substantial in the case of the ordinary or equity stocks, and there is a large return on L.N.E.R. second preference. Moreover, yields on L.N.E.R. first preference and also on L.M.S.R. preferences and Southern preferred, are attractive, bearing in mind the investment merits of these securities, due regard to which would have to be given in the event of nationalisation compensation. As the railways have never in any way given up their right to standard revenue under the 1921 Act, there seems a good case for the view that the fixed rental under the existing control agreement may very well prove a minimum basis for compensation.

It is true that opinions differ considerably as to the relative merits of various classes of stocks; at the present time there is a disposition to favour preference stocks and to class the ordinary stocks as carrying a good deal of speculative risk. Nevertheless, the latter probably are no more speculative than a wide range of industrial shares, and with their dividends virtually guaranteed for the time being, they may also offer the possibility of scope for satisfactory appreciation in price.

There seems little doubt that the opening up of a square deal for Argentine railway stockholders has increased the view that in the circumstances the Government cannot treat home railway stockholders unfairly. It is noticeable that whereas for a lengthy period, pessimistic views in regard to home rails were current in the stock market, more hopeful opinions have developed since the news of the Argentine agreement.

Comparison with a week ago shows that Great Western has improved further from 55¾ to 56, and the preference stock has strengthened to 112, the guaranteed stock to 123½, and the 4 per cent. debentures to 114. L.M.S.R. moved up from 27⅞ to 28⅛, the senior preference from 76 to 77, the 1923 preference from 53½ to 54½; the guaranteed stock and 4 per cent. debentures were also better at 102½ and 108½ respectively.

Among L.N.E.R. stocks the preferred strengthened to 5½ and the deferred to 2½. The second preference attracted buyers, and has moved up further from 26¼ to 27¼; the first preference put on 1½ at 53½, and the second guaranteed improved to 95½ in response to the view that eventually it may reach par. Southern preferred was firm at 71, the deferred improved from 20¼ to 21, the 5 per cent. preference to 110, and the 4 per cent. debentures to 113½.

Among Argentine rails, Buenos Ayres Great Southern fluctuated but at 13 was unchanged on balance, and the 5 per cent. preference at 35 gained 3 points; the 4 per cent. debentures (81) were two points higher. Buenos Ayres & Pacific improved from 7½ to 9, but the 1912 debentures receded from 63 to 59. Buenos Ayres Western rallied from 15 to 16¼ and the 4 per cent. debentures were a point higher at 79. Central Argentine ordinary at 9¼ was higher; the 4 per cent. debentures went back from 77 to 75 and the 5 per cent. debentures at 78 lost a point. Argentine North Eastern ordinary rose to 14.

Central Uruguay stocks were active, and elsewhere the feature was further advance in San Paulo ordinary from 91½ to 98.

Traffic Table and Stock Prices of Overseas and Foreign Railways

	Railways	Miles open	Week ended	Traffic for week: Total this year	Traffic for week: Inc. or dec. compared with 1944/5	No. of Week	Aggregate traffics to date: Totals 1946/7	Aggregate traffics to date: Totals 1945/6	Aggregate traffics to date: Increase or decrease	Shares of Stock	Prices: Highest 1945	Prices: Lowest 1945	Prices: October 1, 1946
				£	£		£	£	£				
South & Central America	Antofagasta	834	22.9.46	32,770	+ 3,970	38	1,232,500	1,135,020	+ 97,480	Ord. Stk.	12	8¾	10½
	Arg. N.E.	753	21.9.46	ps.317,300	+ ps.8,100	12	ps.3,776,000	ps.3,665,900	+ ps.110,100	,,	10	5¾	14
	Bolivar	174	Aug., 1946	3,995	— 1,040	35	34,095	39,437	— 5,342	6 p.c. Deb.	8½	5½	6½
	Brazil	—	—	—	—	—	—	—	—	Bonds	25	17	29½
	B.A. Pacific	2,771	21.9.46	ps.2,175,000	+ ps.241,000	12	ps. 25,288,000	ps.23,620,000	+ ps.1,668,000	Ord. Stk.	7	5	8½
	B.A.G.S.	5,080	21.9.46	ps.3,302,000	+ ps.327,000	12	ps. 39,056,000	ps.37,519,000	+ ps.1,537,000	Ord. Stk.	13⅜	10¼	13
	B.A. Western	1,924	21.9.46	ps.1 213,000	— ps.88,000	12	ps. 14.352,000	ps.13,410,000	+ ps.942,000	,,	12⅜	9½	16
	Cent. Argentine	3,700	21.9.46	ps.3,173,689	+ ps.162,339	12	ps. 37,364,440	ps.36,479,700	+ ps. 884,740	,,	9¾	7	9½
	Do.	—	—	—	—	—	—	—	—	Dfd.	5	2⅞	5
	Cent. Uruguay	970	21.9.46	38.776	+ 4,626	12	418,265	414,996	+ 3,269	Ord. Stk.	7½	4	8½
	Costa Rica	262	July, 1946	37,093	+ 6.000	4	37,093	31,093	+ 6,000	Stk.	16½	13	13
	Dorada	70	Aug., 1946	35,400	+ 6,400	35	256,775	243,335	+ 13,440	1 Mt. Deb.	103	102	102½
	Entre Rios	808	21.9.46	ps.422,500	+ ps.15.900	12	ps.5,067,500	ps. 5,045,100	+ ps.22,400	Ord. Stk.	7½	4¾	7½
	G.W. of Brazil	1,030	21.9.46	30,300	+ 8,300	38	1,035,500	920,700	+ 114,800	Ord. Stk.	30/–	23/6	27/6
	Inter. Ctl. Amer.	794	Aug., 1946	$831,411	+ $112,000	34	$7,303,647	$6,251,918	+ $1,051,731	—	—	—	—
	La Guaira	22¾	Aug., 1946	6,322	+ 109	35	46,020	49,503	— 3,483	5 p.c. Deb.	78	70	58
	Leopoldina	1,918	21.9.46	71,630	+ 8,765	38	2.249,416	1,944,561	+ 304,855	Ord. Stk.	4½	3½	4½
	Mexican	483	31.5.46	ps.1,464,000	+ ps.459.100	22	ps.18,661,800	ps.13,441,600	+ ps.5,220,200	Ord. Stk.	¼	¼	¼
	Midland Uruguay	319	Aug., 1946	20,392	+ 3,190	8	39,376	36,932	+ 2,444	—	—	—	—
	Nitrate	382	15.9.46	5,919	— 3,985	37	150,701	132,226	+ 18,475	Ord. Sh.	75/6	67/6	71/3
	N.W. of Uruguay	113	Aug., 1946	6,471	+ 1,380	8	11,173	11,183	— 10	—	—	—	—
	Paraguay Cent.	274	20.9.46	£60,365	£5.994	12	£726,075	£744,355	— £18,280	Pr.Li.Stk.	79½	77	74½
	Peru Corp.	1,059	Aug., 1946	169,782	+ 21,329	9	320,684	283,203	+ 37,481	Pref.	10⅜	7¾	9¼
	Salvador	100	30.8.46	c 80,000	— c 11,000	4	c1,597,450	c 1,511,000	+ c 86,450	—	—	—	—
	San Paulo	153½	—	—	—	—	—	—	—	Ord. Stk.	60½	50½	97½
	Taltal	156	Aug., 1946	3,255	+ 840	9	7,050	4,200	+ 2,850	Ord. Sh.	17/–	10/6	18/9
	United of Havana	1,301	21.9.46	57,506	+ 14,517	12	649,340	546,982	+ 102,358	Ord. Stk.	3	1	2
	Uruguay Northern	73	Aug., 1946	1,490	+ 25	8	2,621	3,397	— 776	—	—	—	—
Canada	Canadian National	23,535	Aug., 1946	8,772,000	— 770,000	31	63,922,500	72,970,500	— 9,048,000	—	—	—	—
	Canadian Pacific	17,037	21.9.46	1,549,000	+ 5,500	38	41,661,750	57,205,250	— 4,543,500	Ord. Stk.	24	14⅜	18¼
Various	Barsi Light†	202	Aug., 1946	19,605	+ 442	22	129,315	114,652	+ 14,663	Ord. Stk.	131	123	114
	Beira	204	July, 1946	91,254	+ 13,909	43	767,420	770,752	— 3,338	—	—	—	—
	Egyptian Delta	607	31.8.46	19,189	+ 3,640	22	252,299	242,493	+ 9,806	Prf. Sh.	10	8¼	5½
	Manila	—	—	—	—	—	—	—	—	B. Deb.	71	55¼	60
	Mid. of W. Australia	277	July, 1946	14,495	+ 729	4	14,495	13,766	+ 729	Inc. Deb.	97½	85	75
	Nigeria	1,900	July, 1946	369,411	+ 332.848	18	1,490,315	874,172	+ 616,143	—	—	—	—
	Rhodesia	2,445	July, 1946	548,983	+ 13,242	43	5,149,364	5,046,558	+ 102,806	—	—	—	—
	South African	13,323	31.8.46	1,111,916	+ 53,107	22	24,169,374	21,717,772	+ 2,451,602	—	—	—	—
	Victoria	4,774	May, 1946	1,351,280	+ 4,246	—	—	—	—	—	—	—	—

† Receipts are calculated @ 1s. 6d. to the rupee